OCTOBER 1957
VOL. LII No. 10

OCT 11 1957

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VETERINARY Medicine

Established 1905

features in this issue...

Food Additives and their Relation to Public Health

Ether Anesthesia in Horses

Effect of Brucellosis Vaccination on Rectal Temperature and Feed Consumption of Beef and Dairy Calves

Control of Shipping Fever Complex

Canine Cataract Surgery

Clinical Uses of Butazolidin

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Animal Studies with Tolbutamide

Cage for Postsurgical Recovery

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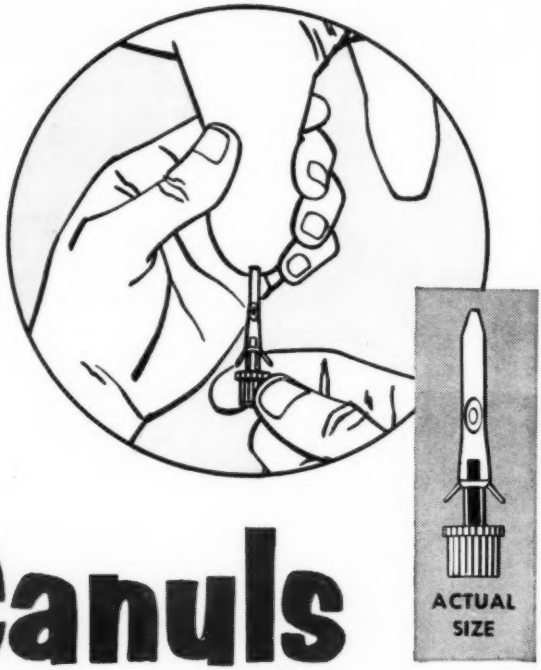

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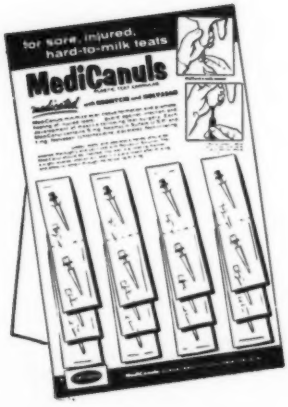

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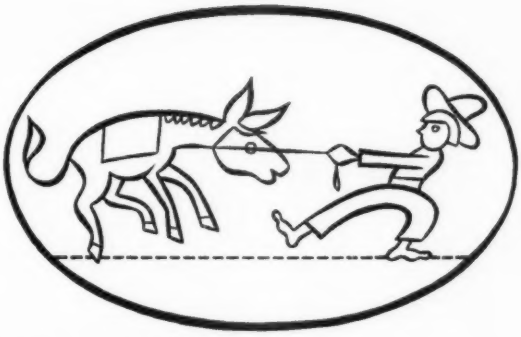

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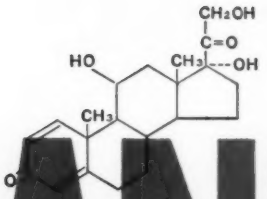

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*Link, R. P.; Newton, D. I., and Huber, W. G.: The Use of Prednisolone in Bovine Ketosis, paper presented at the 93rd Annual Meeting, A.V.M.A., San Antonio, Texas, Oct. 15-18, 1956.

Pfizer *Department of Veterinary Medicine*
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NEWS COMMENT

Compulsory Poultry Inspection Act

Secretary of Agriculture Ezra Taft Benson has assigned to the Agricultural Marketing Service responsibility for administering the recently enacted Poultry Products Inspection Act.

Commenting on enactment of this legislation, which was signed by the President August 28, Secretary Benson said: "The passage and approval of the Poultry Products Inspection Act marks another milestone in the tremendous progress which has occurred in the poultry industry in this decade. Its passage likewise reflects the continued progress this nation is making in assuring the consuming public wholesome and nutritious food on an ever-expanding scale."

The Poultry Products Inspection Act requires that by Jan. 1, 1959, all poultry and poultry products moving in interstate commerce be inspected for wholesomeness. Currently it is estimated that approximately 50% of such poultry is now being inspected for wholesomeness under the voluntary inspection program provided on a fee basis.

The Act becomes partially effective on Jan. 1, 1958, when approved plants may be provided the service. By Jan. 1, 1959, all plants shipping poultry in interstate commerce must be approved and the poultry products processed therein be subject to inspection, unless otherwise exempt.

The gradual application of mandatory inspection requirements between Jan. 1, 1958, and Jan. 1, 1959, has been provided in order to permit plant owners reasonable time to make any plant alterations which may be necessary to meet facility standards required by USDA regulations.

Once in full application, it is claimed that poultry products subject to the Act will receive inspection for wholesomeness comparable to that which has been in effect for red meats since 1907 when the Meat Inspection Act was passed. The Secretary might at any time assign poultry inspection detail to the Meat Inspection Branch.

In commenting further, the Secretary stated: "The Department is not unmindful of the importance and scope of the responsibilities this legislation reflects. We shall continue to maintain the high standards of performance so well established in the Department's extensive voluntary poultry inspection program now serving the poultry industry and consumers. The experience gained, the high standards already established, and the highly trained staff of experienced veterinarians and technicians developed during the 30 years the program has been in operation form a sound basis upon which to build for the future."

VETERINARY Medicine

Established 1905

Registered in U. S. Patent Office

A Monthly Magazine Devoted to the Promotion of the Art and Science of Veterinary Medicine

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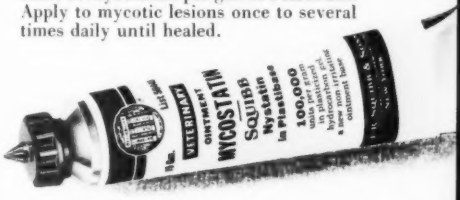

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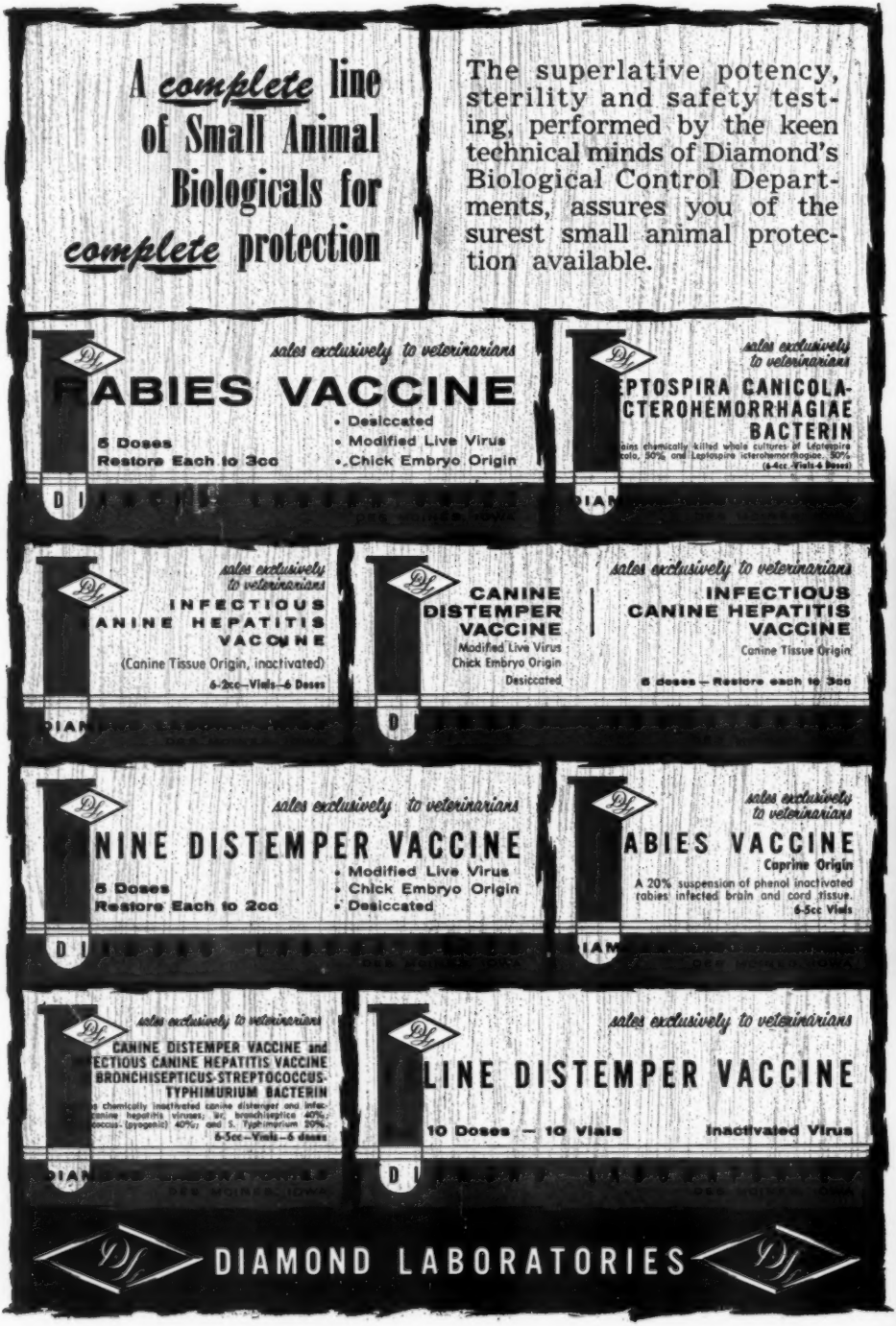
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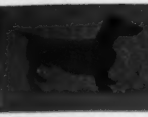 DOG	4 mg./10 lb. b. i. d.	5 mg./20 lb.	5 mg./20 lb.
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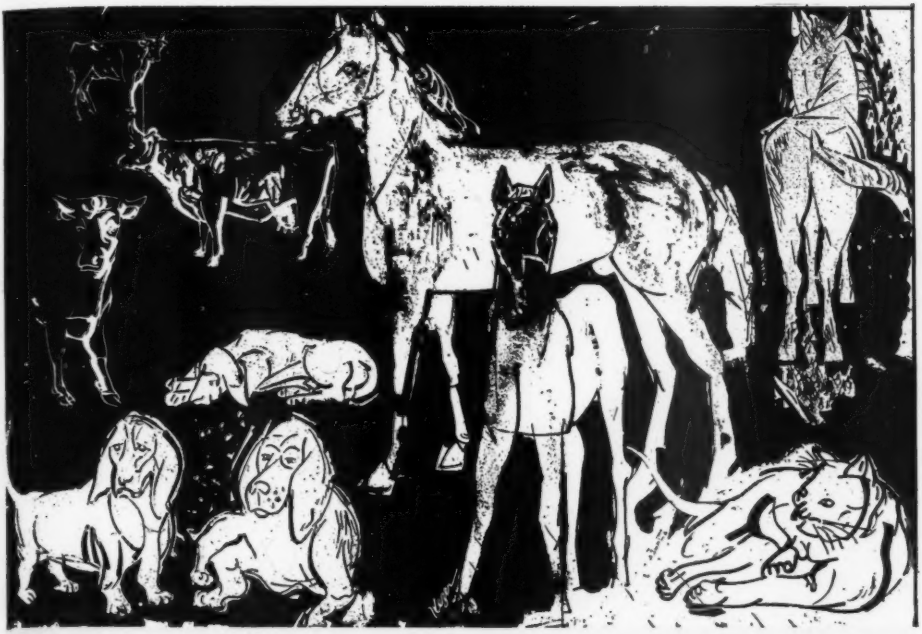

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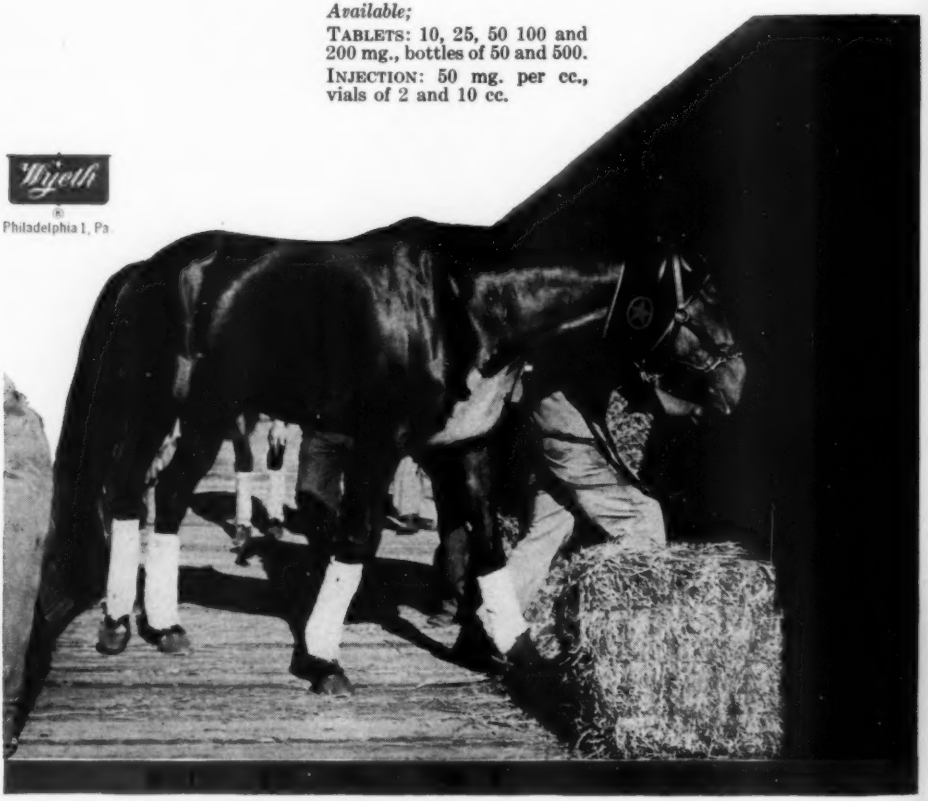

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*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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REFERENCES: 1. Bull, W. S.: N. Amer. Vet., In press. 2. Henry, R. T., and Blackburn, E. G.: Vet. Med., In press.

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Food Additives And Their Relation To Public Health

JOHN H. COLLINS,* D.V.M., Washington, D. C.

THE subject of this article is as timely as it is complex. Many questions are asked from all quarters about food additives and their public health significance but there are all too few answers which are known to be true and correct.

First, I think we should try to reach a common understanding about what we are talking about when we speak of food additives. Food additives are frequently referred to as "chemical food additives" and "chemical additives to food." But chemicals are not new and unusual components of food. All food, from common table salt to the most complex protein, is chemical in nature—that is, composed of chemicals. Many of us daily consume minute quantities of deadly poisons without even thinking about their presence. As you know common table salt is a universally used chemical compound consisting of a combination of two hazardous elements—sodium and chlorine. But do you know that many seafoods such as oysters, shrimp, and lobsters naturally contain minute but significant amounts of arsenic? And that spinach and rhubarb contain natural quantities of oxalic acid which is a poisonous chemical commercially available for bleaching purposes? Or that lima beans contain a glucoside which breaks down to form cyanide and that some wheat cereals contain selenium? But these chemicals are naturally present in the food we eat and can not be looked upon as additives.

What then is a food additive? Perhaps the Federal Food, Drug, and Cosmetic Act provides an adequate idea, at least from the statutory standpoint. Section 406(a) af the Act reads: "Any poisonous or deleterious substance added to any food, except where such substance is required in the production thereof or cannot be avoided by good manufacturing practice shall be deemed to be unsafe for purposes of the application of clause (2) of section 402(a) (2)***," which deems a food to be adulterated "if it bears or contains any added poisonous or added deleterious substance which is unsafe within the meaning of section 406." In this light then we might say that a food additive is any chemical substance added to food at any stage of its growth or production which would not be present were it not for the human element in producing the food.

Why Tamper with Natural Foods

Many may ask, "Why tamper with natural foods?" or "Why add new chemicals to foods if they cause so much concern? Why are they not forbidden outright?" Our civilization is progressive and there are few persons in it who are self sufficient. In these times, even farm families buy much of their food from the supermarket in town. Foods today are produced and distributed on a nationwide basis

*Veterinary Medical Director, Bureau of Medicine, Food and Drug Administration, Department of Health, Education, and Welfare.

and many on an international basis. This is accompanied by transportation over thousands of miles and storage for long periods. In order that such foods may be subjected to the rigors of prolonged storage and transportation and still remain in good condition, many technical developments have evolved which were undreamed of by our grandparents or even by our parents. These developments permit transportation and storage of many ready-to-eat and ready-to-cook food products. The wide variety of wonderful fresh fruits and vegetables in the supermarkets today would not be there were it not for the dusts and sprays that present-day farmers use to combat insects, weeds, plant diseases, and other competitors for our food supply. Chemical agents are also used to combat other types of food waste and for useful purposes such as preserving, bleaching, prevention of caking, prevention of oxidation, thickening, lubricating, and coloring. Food chemists make a real contribution to the national economy and well-being when they prepare a long list of foods and food materials such as salad oils, shortenings, and emulsifiers from basic food items like soybeans and peanuts. This then is the answer to our interrogators; there is no doubt that chemistry plays an important role and certainly has a place in today's food technology and we must learn to live with it as well as to deal with it.

It seems that the possible exposure of large numbers of men, women, and children to chemical residues in foods, such as meat, milk, and eggs, which have their origin in animals treated with various drugs creates the greatest consternation among veterinarians primarily interested in public-health activities. This segment of the veterinary profession constantly raises speculative questions involving the actual or possible presence of the many antibiotic drugs in the public's food supply. Perhaps the following account of our present knowledge will be helpful in this connection.

Antibiotics as Food Preservatives

Much has been written and said about the value of antibiotics in general for preservation of our food supplies. These drugs have, of course, been used effectively for years against many disease-producing organisms in man and in animals. This use suggested to some investigators that the antibiotics might be equally effective against the microorganisms responsible for spoilage and other forms or deterioration in food. In general, however, the antibiotics are potent substances capable of causing harmful or deleterious effects if misused. In recognition of this, the Department of Health, Education, and Welfare issued the following statement of policy in the *Federal Register* of November 30, 1955: "Direct or indirect addition of antibiotic drugs to foods for human consumption. (a) The Food and Drug Administration has received inquiries concerning the use of antibiotic drugs as food preservatives. Careful consideration has been given to this question and the conclusion has been reached that such use constitutes a public health hazard. Consumption of food so treated may cause sensitization of the consumer to such antibiotics and may result in the emergence of strains of pathogenic microorganisms resistant to these drugs.

"(b) The presence of antibiotic drugs in foods intended for human consumption, or the direct or indirect addition of such drugs to such foods, may be deemed an adulteration within the meaning of section 402 of the Federal Food, Drug, and Cosmetic Act.

"(c) This statement of policy will not bar the establishment of safe tolerances for antibiotic drugs in or on raw agricultural commodities under the provisions of section 408 of the Act, where suitable evidence of usefulness of the antibiotic drugs and of safety of the residues is available."

The only tolerances for antibiotic drugs in food which have been established to date are for seven parts per million of chlortetracycline (aureomycin)®[1] or oxytetracycline (terramycin)®[2] in or on raw poultry. These tolerances were established in accordance with the provisions of the Pesticide Chemicals Amendment to the Act which require, among other things, that the antibiotic additives serve a useful purpose and that their use within the tolerance presents no hazards to those who consume the poultry. The evidence to support the tolerance of seven parts per million included a finding that no significant antibiotic residues remain after the poultry is cooked and ready for human consumption. The useful purpose served by these antibiotics is their preservative action in retarding bacterial spoilage. It should be emphasized, however, that they are effective for this purpose only if poultry is kept adequately refrigerated and handled under sanitary conditions at all times and is itself a sound, wholesome product.

The Act requires food bearing or containing a chemical preservative to be labeled with a

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®[1]American Cyanamide Corp., Fine Chemicals Div., Pearl River, N. Y.
®[2]Chas. Pfizer Co., Brooklyn, N. Y.

statement of that fact. For this reason poultry on which either of the two antibiotics have been used must bear labeling declaring their presence as a preservative. This does not mean, of course, that the statement of their presence as a preservative is a warning to consumers that the poultry is any less safe than untreated poultry but is required because the law recognizes the right of consumers to know if a food contains a preservative.

There have been some proposals and experimental work on the use of these and other antibiotics for the preservation of a number of foods such as fish, and other seafoods, meat, cheeses, and salad vegetables. To date none of these uses are being employed commercially and no tolerances have been established for them. Before tolerances for such uses of the antibiotics can be established, there must be sound evidence that the added antibiotics are safe. This will require facts about, (1) the ability of the concentrations that would be present to promote the development of drug-resistant organisms, to sensitize individuals to the antibiotic drugs, and to cause allergic reactions in persons already sensitized and, (2) the cumulative toxicity of small doses, repeated daily, for the lifetime of test animals.

In conjunction with the direct addition of antibiotics to food for their preservative effect there is the possibility of their indirect addition incidental to some other use of the antibiotics. The antibiotics already are being used to some extent in agriculture, but under conditions that must insure that they do not remain in the food at the time of harvest. For example, pear trees are sprayed at blossom time with a broad-spectrum antibiotic to control fireblight, and seedling tomato plants are dipped in or sprayed with solutions of the antibiotics to control fungus diseases. However, because of the time between spraying and harvesting none of the antibiotics remain in the products at the time of harvest. Waste liquors from manufacturing plants containing residual antibiotics are sometimes added to animal feeds to speed up the growth of livestock though no residues of the antibiotics remain in the dressed carcasses of the animals at the time of slaughter.

The antibiotic drugs are, of course, used in veterinary medicine as well as in human medicine and this naturally raises the question of the possibility of antibiotic residues finding their way into food produced from the domestic animals. Our studies to date, however, have not shown this to be a problem in any area except that of penicillin in fluid market milk.

Penicillin in Market Milk

We became aware of the problem of penicillin in fluid market milk some time ago. Three surveys have been made, the first of which was rather limited and the last two quite extensive. The following is a brief summary of these surveys: In the first survey 3.2% of 94 samples were found to contain penicillin. In this preliminary study, a number of other dairy products such as cheese, butter, dried milk, and evaporated milk were tested. No antibiotic activity was demonstrated in these latter products. In the second survey, 474 samples of market milk were tested and 11.6% contained penicillin. The concentration in the milk varied from 0.003 unit per milliliter to 0.08 unit per milliliter (highest amount about 80 units per quart). In the third survey completed in January 1956, 1,706 samples were examined and these were collected from all of the 48 states and the District of Columbia. This extensive survey revealed penicillin in concentrations of 0.003 to 0.550 unit per milliliter in 5.9% of the samples examined (highest amount 550 units per quart). In addition, one of the penicillin positive samples apparently contained streptomycin, and 17 additional samples (approximately 1%) appeared to contain bacitracin, one of the tetracyclines, or a combination of these drugs. Penicillin was confirmed by the penicillinase-activity tests, while the other antibiotics could not be specifically identified.

While these facts are no basis for general public alarm, they do point to the need for action to get penicillin out of milk.

In September 1956, a Medical Advisory Panel* was convened to discuss the matter and following this steps were taken to deal with it.

(1) Through cooperation with the Department of Agriculture an intensive program has been initiated to educate the farmer concerning the importance of not using milk for human consumption from cows treated for mastitis with antibiotic drugs for at least three days following the last treatment. In addition, the National Milk Producers Federation, which reaches some 500,000 farmers, is assisting in this educational program through their state agents.

(2) On January 23, 1957, there appeared in the *Federal Register* a notice of proposal and on April 30, 1957,a final order requiring labeling "On the immediate container (of an antibiotic preparation) if it is intended for use

in the prevention or treatment of mastitis in dairy animals by intramammary infusion the statement—'Warning—Milk taken from diary animals within .... hours after the latest treatment for mastitis must not be used for human consumption.' The blank being filled in with the number 72, unless the person who requests certification has submitted to the Commissioner information adequate to prove that milk from dairy animals treated with the drug as prepared by him contains no antibiotic after a time period which is shorter than 72 hours after the latest treatment. In such cases the blank shall be filled in with the number 60, or 48, or 36, or 24, as authorized by the Commissioner."

(3) On February 9, 1957, a notice of proposed rule making was published in the *Federal Register* proposing to amend all the regulations relating to penicillin and penicillin-containing drugs to establish 100,000 units of penicillin as the maximum single dose in those preparations intended for use in the treatment of mastitis in milk-producing animals and administered by the intramammary route. The reasons upon which this proposal was based were also published at that time. In the *Federal Register* of May 14, 1957, a final order to this effect was published. This order became effective August 12, 1957.

While the possibilities of antibiotic residues in meat, milk, and eggs are apparently of primary concern to veterinarians in the public health field, the Congress of the United States and the Food and Drug Administration have had to concern themselves about other sources of contamination of all components of our daily national diet as well as of these basic food items. In addition to the chemicals used as drugs for the prophylaxis and therapy of animal diseases we must also consider the various herbicides, pesticides, germicides, fungicides, and plant metabolizers used in present-day horticulture which, being consumed by food-producing animals in or on forage, may produce residues in animal-food products for human consumption. In this field the United States Department of Agriculture collaborates with the FDA by endorsing the functional value of any new preparation for such proposed uses.

Report of Congressional Committee

The use of chemical additives in food was studied in 1951 and 1952 by a House Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics (the Committee's report no. 2356, Union Calendar no. 743, submitted to the second session of the 82nd Congress on June 30, 1952). The Committee's report stated in part: "In conclusion, the evidence has convinced your Committee that chemicals have been utilized in and on the food supply of the nation without adequate and sufficient testing of their possible long range injurious effects; that the public is entitled to greater protection with respect to the foods it must necessarily consume; and that such protection is not afforded by existing legislation, under which the government may take no action until after the food has been placed upon the market and injury may have occurred. Your Committee recommends, therefore, that the Federal Food, Drug, and Cosmetic Act be amended to require that chemicals employed in or on foods be subjected to substantially the same safety requirements as now exist for new drugs and meat products. Adequate provisions for a comprehensive judicial review of administrative decisions should be included in such an amendment."

Since that time a number of bills dealing with the subject of chemical additives in food have been introduced in Congress. These all seek to deal with the problem which arises from the fact that the Federal Food, Drug, and Cosmetic Act, *does not require* a chemical to be tested for toxicity before it is added to food. If it is known to be poisonous or deleterious its use is subject to certain limitations, but if its toxicity is not known it can be added. Thus under the present provisions of the Act it is necessary to establish the harmful nature of an untested or poorly tested additive before action can be taken to prevent its use. The necessary testing, including chronic toxicity tests, may take as long as two years, during which time we are without authority to prevent the use of the chemical additive. Although most manufacturers do make the necessary tests to establish the harmlessness of their new additives and consult with us before using them, some do not and instead go ahead on their own responsibility.

Pesticide Chemicals Act

In 1954, the Congress amended the Federal Food, Drug and Cosmetic Act by adding section 408, known as the Pesticide Chemicals Amendment. This provides for the establishment of safe legal tolerances for pesticide chemical residues or for exemption from tolerances for such residues in or on raw agricultural products. The amendment itself will

be found beginning on page 59 of the current pamphlet containing the text of the Food, Drug, and Cosmetic Act (available on request). Tolerances for a considerable number of pesticide chemicals in or on a variety of raw agricultural commodities have already been established. The tolerances for antibiotics in food, mentioned earlier in this paper, namely, the tolerances for chlortetracycline and oxytetracycline in or on raw poultry, were established under this section of the Act.

Although the Pesticide Chemicals Amendment to the Act provides a means of dealing with a special class of chemical additives in a special class of food, it does not cover the many other possible uses of chemical additives in foods. During the last session of Congress hearings were held by the House Committee on Interstate and Foreign Commerce on 11 bills dealing with this subject. Though none passed, the matter was seriously considered. A number of bills have been introduced in the present session of Congress dealing with this subject. Apparently everyone concerned is unanimous in thinking that a food-additive bill or amendment to the Act is essential.

I think it is safe to predict that ultimately we will have such an amendment to the Federal Food, Drug, and Cosmetic Act; the only thing remaining to be done is the mechanics of working out the proper form of amendment.

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Semen Preservation Without Freezing

A University of Illinois news item states that by placing bovine semen in an airtight container, using a special diluter with carbon dioxide, at temperatures ranging from 65 to 80 F., semen can be kept viable for as long as a month without freezing. In preliminary tests, semen that had been handled by this method for a period of seven days settled 75% of the cows inseminated with it. It is argued that the carbon dioxide in the diluter has a tranquilizing effect on the sperm so as to put them in a resting phase.

▾ ▾ ▾

Lowland Abortion

There appear to be some bovine abortions in herds that by all known tests are free from *B. abortus* and *Vibrio fetus*. The only noticeable condition in these herds is that they were pastured on marsh-land and therefore the condition is colloquially spoken of as "lowland abortion." By some it is attributed to the consumption of some unknown form of vegetation that grows only in low places. Immaterial of the exact cause, research workers at the University of Wisconsin for the time being recommend: (1) Breed cows to freshen before the beginning of the pasture season, (2) pasture pregnant females on upland pasture, (3) use "tame" weed-free pastures when upland pastures are not available.

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Treatment of Vibriosis in Bulls

The Treatment of Vibrio Fetus Infected Bulls designates an article by Melrose *et al.* appearing in the July 20, 1957 number of *The Veterinary Record*. After an introductory statement the writers indicate that cows may conceive normally if served three months or more after infection has occurred from contamination by a *Vibrio fetus* infected bull. Cows "acquire a tolerance to the disease," though bulls not treated remain "both infected and infective for the rest of their lives."

However, the authors feel encouraged following the local application of antibiotics. They disinfected the preputial orifice and the underside of the abdominal region with 1% cetavlon. They used either "an antibiotic infusion consisting of 2 gm. streptomycin and 1,000,000 units penicillin in an oily base" bringing the volume up to 100 ml., or a cream "consisting of 2 gm. of streptomycin and 1,000,000 units of penicillin, the volume made up to 100 ml.", and dispensed in a collapsible tube. Either the infusion or the cream was introduced into the posterior third of the prepuce, its orifice closed by bandaging, and then the antibiotic preparation massaged throughout the region for one minute, repeated every ten minutes for a total of a duration of one hour. The bandage is then removed and the bull placed in a disinfected stall.

The foregoing described treatment was applied once daily for three consecutive days. Treated bulls were test-mated 14 days later in Vibrio-free heifers, "using one heifer per bull," and this was repeated once again eight weeks later. The general conclusion of the authors is that 12 bulls were successfully treated and have remained free of infection for one year. It is finally reported that some researchers using antibiotics locally indicate later breakdowns, but it has not been determined whether or not this may have been a result of reinfection; therefore, treated bulls must be rigorously guarded against reinfection.—*R. R. Dykstra, D.V.M.*

An Apparatus For Administration Of

Ether Anesthesia In Horses

W. C. REED, D.V.M., C. ALLEN, D.V.M., M. E. GLASSER,* B.S., and E. R. KEEFE,* Miami, Florida

Effective and controlled anesthesia in large animals practice has been the deterrant to many indicated surgical procedures. Despite the development of many new anesthetic agents, the veterinarian concerned with surgery in large animals has been handicapped because of inability to (a) properly control the degree of anesthesia, (b) rapidly change the degree to either a higher or lower level as indicated, and (c) effect almost immediate post-surgical recovery.

The latter is of great importance (1) to the welfare of the patient, (2) to avoid the prolonged period of restraint, and (3) to reduce the number of people required to bring the animal out of anesthesia.

Development of Useful Apparatus

The authors have been considering various methods of effecting ether-oxygen anesthesia for a considerable period. Several units were designed† and modified or discarded as various technical problems were presented.

Without attempting to report on the evolution of the equine etherizer or to discuss the physiology of ether-oxygen anesthesia, this report is presented of an ether-oxygen vaporizer, the success of which has in every way satisfied those assigned tasks of development.

The unit is a durable apparatus, simple to operate, and highly effective. Utilization of a semi-closed system with calibrated blow-off exhaust and rebreathing through a CO_2 absorber permits the use of a minimum quantity of ether with maximum control.

Description (See Illustration)

The professional equine etherizer consists of a series of four vaporizers [1], all connected permanently to a single ether chamber [2]. Each of the vaporizers are individually controlled by means of needle valves [3] and mounted on a single manifold which is activated with a pressure of 40 p.s.i. Oxygen passes from the cylinder and regulator [4], or from a source of piped oxygen by means of a pressure hose [5], through a master needle valve [6] which is provided as an added safeguard so that the entire system may be closed off at any time. The outlet duct of each of the four vaporizers is connected to a manifold [7] by means of a corrugated flexible hose [8] to allow for ease of mobility. The four inlets in turn connect to a common duct [9], consisting of a 3-in. flexible hose leading to the inspiratory "tee" [10]. The distal end of the tee comprises the soda-lime cannister [11] for absorption of CO_2. The terminal section of the cannister receives the 60-liter bag, with its tail inlet for administration of pure oxygen through four-foot corrugated oxygen hose [17] taken from the oxygen manifold supplying the ether vaporizer.

The proximal end of the inspiratory tee [10] is again fitted with a 3-in. flexible rubber tube, which can be fitted either with an anatomical equine mask [13] or an endotracheal inflatable cuff catheter [14]. The mask is a light weight aluminum welded unit with a removable inflatable rubber cushion [15]. When the endotracheal catheter is used, a catheter adapter is provided to fit into the 3-in. flexible rubber tube.

Operation of Ether-Oxygen Apparatus

Prior to surgery, the horse is given a tranquilizing drug intravenously to reduce apprehension at the time of the application of the ether mask. Other preanesthetic medication has been used with favorable results.

The professional equine etherizer which is readily portable is brought into position. Approximately 2 lb. of ether is poured into the ether chamber. The high pressure oxygen hose [5], is secured to the cylinder regulator [4], and the oxygen is turned on. As soon as the animal is in position all four vaporizers are turned on by turning needle valves [3], so as

†Equipment developed by research division of Professional Veterinary Service, Miami, Fla.
*Research consultant.

to fill the flexible tubes and the breathing bag with a dense vaporized ether-oxygen mixture. The inflatable cushion [15] of the anatomical mask [13] which has been previously inflated is placed securely over the horses' face.

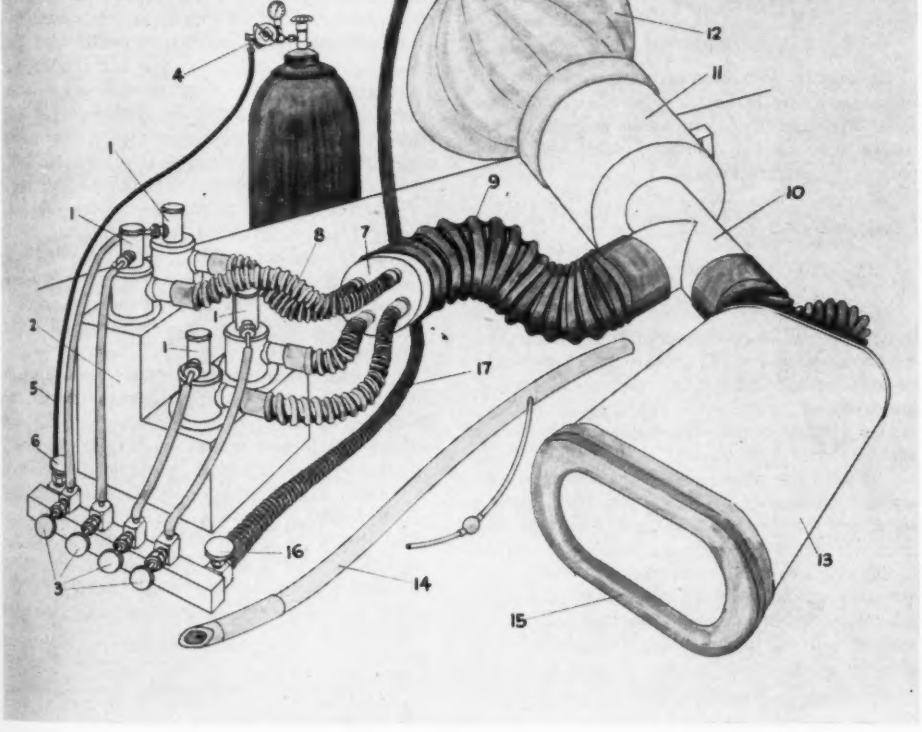
Effective surgical anesthesia may be expected in from ten to 15 minutes with no resistance on the part of the animal. From this point the degree of anesthesia at which the animal is maintained can be readily and instantly controlled by either increasing or decreasing the flow of oxygen through the needle valves. If at any time, either during inception of anesthesia or during surgery, immediate high volume ether mixture is desired, the adjustable top of the ether vaporizers may be raised. This causes a large influx of room air to be drawn into the vaporizers and greatly increases the velocity and concentration of the ether vapor. These same valve tops are fitted into the vaporizers so that in the event that excessive pressure should build up in the unit, these valves will open and allow the surplus to blow off.

As the surgery approaches completion, it is possible to cut down on the flow of ether vapor to lighten the plane of anesthesia. As the flow of ether-oxygen is shut down it is further advisable to turn on the oxygen needle valve [16] which will result in the administration of pure oxygen to the animal. The exhausted air which tends to build up in pressure will blow off at the vaporizer valves. As the animal begins to regain consciousness, it may be further advisable to hold the mask lightly to the face so that exhaled air will escape easily.

The endotracheal catheter consists of a suitable length of transparent tubing with a built in inflatable tube and an inflatable cuff. It is considerably easier to control ether anesthesia when the previously described process is followed.

Results and Observations

The administration of oxygen, before and after surgery is completed, eliminates the ne-



cessity of keeping the animal on the floor for long periods as is necessary when barbituates are used intravenously. Administration of oxygen allows the animal to recover and stand on its feet approximately one to two hours after surgery, and eliminates most of the violent swimming and thrashing accompanying the critical excitement stage. By proper adjustment animals may be returned safely to consciousness without injury to themselves or operative sites.

If oxygen is administered before surgery is completed (in several cases the ether was completely shut off and the animal was kept under light anesthesia by the rebreathing of ether in the system) recovery time can be greatly reduced. When the animal gets to its feet, it will stagger a little, but will quickly regain equilibrium and be able to walk about.

The use of ether anesthesia allows various types of surgery to be performed that previously could not be attempted because of the difficulty in controlling general anesthesia. No serious respiratory or cardiac depressant effect is observed. As the level of anesthesia deepens pulse and respiration increase, thus enabling the operator to keep a closer watch on the animal and the depth of anesthesia.

Summary

Experience with the unit described has been most gratifying as to the simplicity of operation, safety, ease of controlling phase of anesthesia, and ability to effect quiet return of patient to consciousness.

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Disposal of Radioactive Waste

The disposal of radioactive waste material is a problem of considerable importance and a source of worry to scientists. Half-life of various isotopes range from a few minutes to hundreds of years. The most generally accepted method of disposal at this time is to mix such material with cement in 50 gallon drums and deposit the whole into deep sections of the ocean. Research of a preliminary nature seems to indicate that water below 600 feet does not reach the surface for 300 years or more. Scientists are uncertain regarding the amounts of radioactivity that will ultimately be released into ocean waters so as to be sprayed into the atmosphere, and thus possibly become injurious to sea life as well as to air breathing land life. Research work is continuing.

The Debt of Veterinary Medicine to Ancient Greece†

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Heirs of bygone civilizations, the Greeks provided the foundation for scientific medicine. Amongst this people of poets and artists, the physicians revealed themselves as marvelous observers. Hippocratic thought was radiant with common sense and its feeling for mankind. It imposed itself on the physicians for all time and its precepts still guide medical practice today.

It was evident that the Roman mulomedici, like the Byzantine veterinarians, benefitted in large measure from the science and methods of Hippocrates. Though the hippiatrists were neither philosophers nor thinkers, they had open and clear minds, and were sharp and conscientious observers; they were the creators of veterinary medicine.*

The Romans did not contribute anything new to the science of Hellas. The Latin authors were men of letters or compilers who certainly collected the veterinary writings of the Hippocratic period and wrote dissertations, though incompetently, on animal medicine. It is remarkable that the literary product of the mulomedici was *nil*.

The Hippocratic writings can be said to have recorded the acme of medical thought in antiquity. Eight hundred years later, the work of the hippiatrists showed that this was a brilliant era in the history of veterinary medicine.

The hippiatrists were physicians; several among them seemed to have practiced both medicines simultaneously. All of them knew Hippocratic science. Their therapeutics were copied from that practiced on man; they used the same methods in their surgery and the same instruments.

It was their teaching, collected by the Roman annalists, forgotten during the centuries of the Dark Ages, and partly rediscovered by the Arabs, which was reborn to perpetuate itself, almost without change, until schools were founded. The mediocre book by Vegetius, which was translated into every language, became the guide of the artisans during the renaissance of the art. But, in reality, its value was vested in the content of its Greek thought, and it is to that alone that we owe our homage.

†Translated from Leclainche, E., *Histoire de la Medecine veterinaire*, Office du Livre, Toulouse, 1936, p. 69.

*The hippiatrists were the Byzantine veterinarians (ca. A.D. 300-400). The Roman veterinarians were the mulomedici.

Effect Of Brucellosis Vaccination On Rectal Temperature And Feed Consumption Of Beef And Dairy Calves†

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THE value of calfhood vaccination to control brucellosis in cattle is recognized. Since 1940 when the (now former) Bureau of Animal Industry, United States Department of Agriculture authorized its use, the administration of strain 19 vaccine has increased until in fiscal year 1956 more than 4,700,000 calves were vaccinated in the United States, its territories and possessions, alone.[1]

Because the immunologic responses to strain 19 vaccination have been, and are still being, intensively studied, these responses are known, at least in a general way, by almost everyone engaged in any phase of brucellosis control.

The systemic responses of the calf to strain 19 vaccination are not as widely appreciated. Cotton,[2] for example, has demonstrated a leukocytosis and an altered differential white blood cell count persisting for seven to eight days after vaccination. Harris[3] has pointed out that after the vaccination of adult cows there occurs a fall in milk production which may last for several weeks and that pregnant animals may abort. Several authors[4-8] have commented on the elevated temperature and anorexia subsequent to vaccination; however, there has been little detailed data presented in this connection.

Experimental Data

Data were collected in the Missouri Climatic Laboratory.[9,10] A total of 36 calves, six each of the following breeds: Shorthorn,

†Supported by A.E.C. *From the Departments of Physiology and Pharmacology (Dale) and Medicine and Surgery (English), School of Veterinary Medicine, University of Missouri.

The authors gratefully acknowledge the Departments of Dairy Husbandry and Agricultural Engineering, University of Missouri, for the animals and climatic control in this experiment.

Journal Series Paper No. 1755 approved by the Director of the Missouri Agricultural Experiment Station.

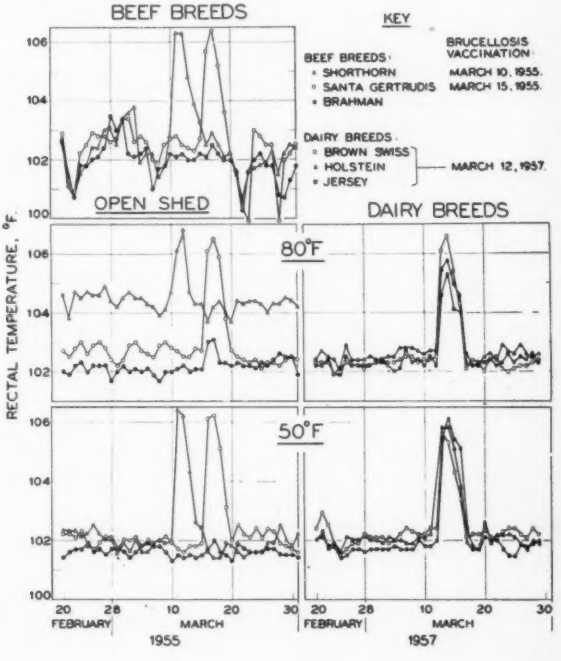

Fig. 1. The effect of strain 19 vaccination on rectal temperature of beef and dairy calves raised under controlled environmental conditions (50F. and 80F.) and of beef calves in an open shed.

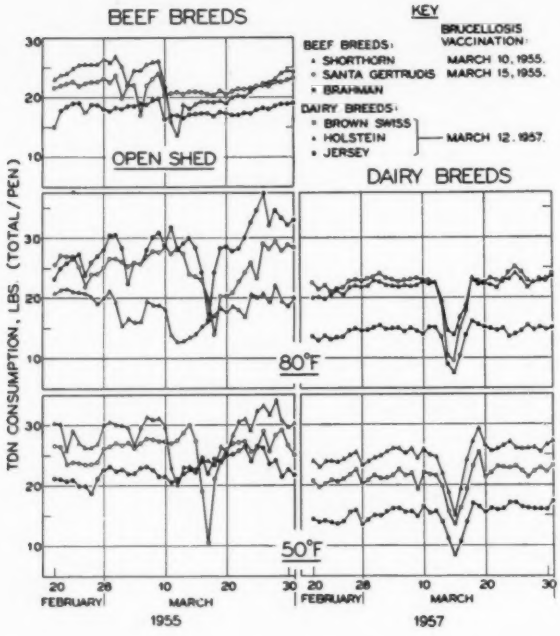

Fig. 2. The effect of strain 19 vaccination on TDN consumption by beef and dairy calves under controlled environmental conditions (50 F. and 80 F.) and by beef calves in an open shed.

Santa Gertrudis, Brahma, Jersey, Holstein, and Brown Swiss, were observed. Three calves of each breed were raised at a constant environmental temperature of 50 F., the other three of each breed at a constant environmental temperature of 80 F. An additional group of beef calves (three each of Shorthorns, Brahma, and Santa Gertrudis), housed in an open shed with daytime access to a lot, was also observed.

Feeding and management of the beef breeds at the two temperatures and in the open shed was practically identical; the calves had access to water at all times; they were allowed grain and hay free choice until vaccination at which time the grain ration was reduced to conform with accepted feeding practices. Feeding and management of the dairy calves were the same except that the grain ration was limited from the outset to conform with accepted dairy calf feeding practices.

Strain 19 vaccine, 5 cc. of liquid preparation, was injected subcutaneously in the neck of all calves except the Brahmas. Temperature was measured at a depth of four inches in the rectum between the hours of 7 and 8 a.m. Consumption of hay and grain by the three calves of each breed in a pen was determined by a weigh-back technic; TDN consumption was calculated by the customary formula.*

*TDN was computed by the following formula: TDN (lb.) = Lb. hay X .503 + Lb. grain X .725.

Fig. 3 Calves were kept in groups of three. Walls of the pen are made of thick aluminum.

Results and Discussion

Average rectal temperatures for the various breeds under the different environmental conditions are shown in figure 1. The response to strain 19 vaccination was immediate and dramatic; the temperature was elevated 3 to 4 F. for the first two or three postvaccinal days then declined rapidly and was usually normal by the fifth day after the vaccine was administered. Although there is a slight breed difference in the 50 F. dairy calves, the temperature response was not significantly different among the various breeds of cattle.

The effect of environmental temperature on rectal temperature is obvious in the 80 F. Shorthorn calves. These calves did not shed their hair; their rectal temperatures were between 104 and 105 F. unless they were clipped; after clipping their temperatures were between 103 and 104 F. The effect of environmental temperature on rectal temperature is also apparent on the calves in the open shed; it is felt that the variability of the mean daily rectal temperature is a reflection of changes in the environmental temperature.

The Brahma calves were not vaccinated; with the exception of the Brahmas in the 80 F. chamber* their rectal temperatures remained quite constant.

The effect of vaccination on feed consumption is apparent in all breeds except the Santa Gertrudis in the open shed (figure 2); in this one case the grain ration was reduced on the day of vaccination and TDN consumption was not noticeably affected as it was in all of the other calves. All of the beef breeds were subjected to some degree of ration change at or about the time of vaccination; this is responsible for the irregular data obtained at that time.

Summary

The administration of strain 19 Brucella vaccine to both dairy and beef calves under

*One of the Brahma calves at 80 F. contracted pneumonia (rectal temperature 106 F.) the day after the other breeds were vaccinated. The sick calf was responsible for the decreased feed consumption and the increased mean rectal temperature of the 80 F. Brahmas. The calf was treated with antibiotics and recovery was uneventful.

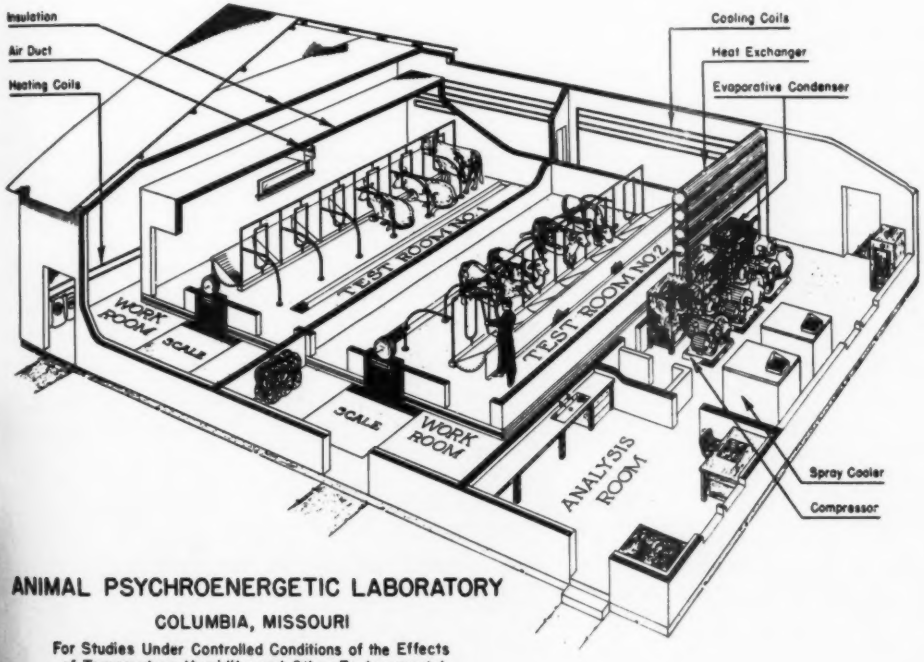

Fig. 4 Floor plan of the climatic laboratory. For the calf experiments the six stanchions in each chamber were replaced with three calf pens.

Fig. 5. Calves could be confined in stanchions for some measurements. The mangers were used for feeding and the watering device is partially shown in the lower left hand corner.

controlled environmental conditions produced marked systemic responses. Rectal temperature was elevated 3 to 4 F. on the first two or three days after vaccination and did not return to normal until about the fifth day postvaccination. The calves were observed to be listless for a period of several days after vaccination. Feed consumption was depressed about 30% on the third postvaccinal day and did not return to normal for about a week after vaccination.

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10. Details of the experiment will be published in the Environmental Physiology and Shelter Engineering series of Mo. Ag. Exp. Sta. Research Bulletins.

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Trichophyton rubrum infection (athlete's foot), a common human pathogen, is extremely contagious from man to man. This persistent form of dermatophytosis in animals is rare, however.

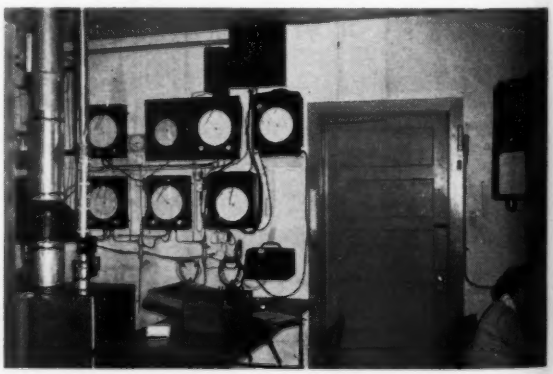


Fig. 6. Some of the recording devices used in the control of the animal chambers.

Control Of The Shipping Fever Complex With Terramycin In Feedlot Rations

GAIL EDWARD HAWLEY,* D.V.M.

PRELIMINARY trials with oral terramycin® in the control of shipping fever in cattle were reported in 1954, by Reynolds, *et al.*,[1] who studied an aggregate of 35,400 animals. They found that in groups which received terramycin in water or feed for five days prior to shipping, the number requiring subsequent treatment was small — from 1.6 to 3%. However, in groups not receiving this antibiotic on a herd basis, from 9 to 12% required further treatment because they exhibited severe symptoms of the shipping fever complex. Later investigations by our group have been concerned mainly with administration of terramycin in feed at high levels. To date over 50 trials have been conducted in commercial feedlots in the states of Wyoming, Colorado, Nebraska, Arizona, New Mexico, California, and Iowa. These are the subject of the present report.

Method

In these trials, feeding of the antibiotic was begun immediately upon arrival of the cattle in the feedlot and was continued for periods of from three to eight days. The dose was from 0.25 gm. to 2 gm. daily, according to the size of the animals. The terramycin was incorporated into pellets having compositions as shown in table 1.

TABLE 1. Experimental Terramycin-Medicated Feed Supplements

	A (lb.)	B (lb.)	C (lb.)
Sun-cured alfalfa hay	1300	.....	1100
Dehydrated alfalfa leaf meal	400	1100	400
Ground yellow corn	.....	200	200
Milo	.....	200	.....
Millet	.....	200	.....

Terramycin was added at appropriate levels in the form of TM-10 which contains 10 gm. antibiotic per pound.

In preventive trials, disease signs were nominal or absent when administration of the medicated feed was begun. In each feedlot a control group not fed the antibiotic was kept under comparable conditions for the same length of time and both groups were observed by veterinarians attending the lots. Records of the health of the animals were kept on forms provided for 15 consecutive days following the initiation of antibiotic feeding. These recoros reveal the number of animls ill or dead each day and the probable nature of the illness.

In the treatment trials, evidence of the shipping fever complex existed to a greater or less degree at the start. In these trials, no controls

*Deceased. Previously with Chas. Pfizer & Co., Inc.

®Chas. Pfizer & Co., Inc., Brooklyn, N. Y.

View of commercial feed lot of the southwestern area. Animal in foreground exhibiting signs of advanced pneumonic stage of shipping fever complex.

TABLE 2. Summary of 21 Preventive Trials

	Control	Terramycin-fed*
Aggregate number animals	16,936	13,162
Requiring additional medication —		
Number animals	936	169
Number per 1,000 head	55	12.8
Deaths —		
Number animals	87	21
Number per 1,000 head	5.1	1.6

*0.25 to 2 gm. per head per day for 3 to 8 days. In most trials the feeding period was 3 to 5 days.

were maintained; all animals received the terramycin medicated feed, and the course of the disease within the group was recorded.

Results — Preventive Trials

A summary of 21 trials with over 30,000 animals exposed to the shipping fever complex is given in table 2 and data of individual trials appear in table 3.

Many other trials were set up, but as would be expected, in some of these there was no outbreak of shipping fever in either control or treated groups. In others there were outbreaks of various feedlot diseases but no preponderance of shipping fever. In still others therapy in addition to terramycin in feed was given all animals. Tests with such complicating factors are not included among those shown in the tables.

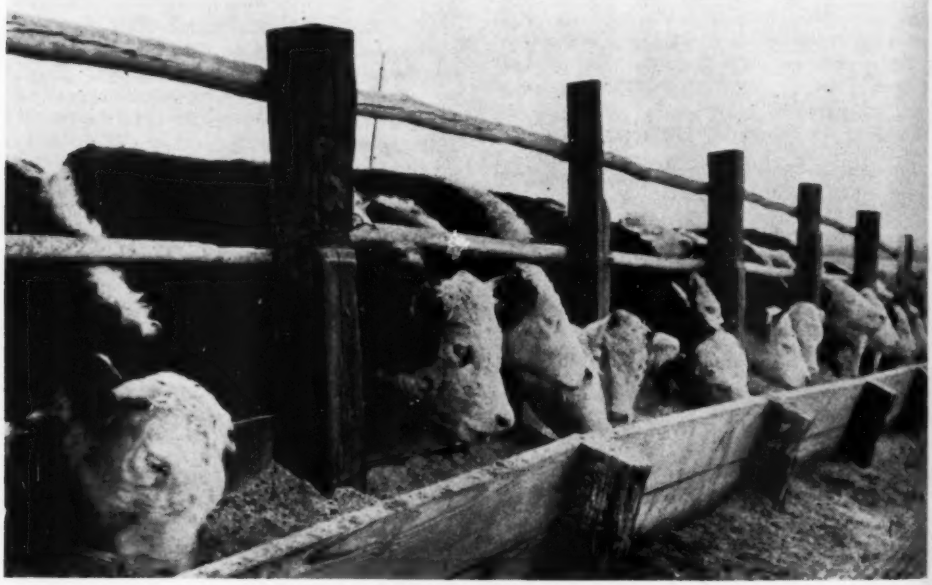
Results — Treatment Trials

An aggregate of 1,077 animals were involved in six trials. Details follow:

C-6-143. A group of 106 light calves, all exhibiting symptoms of mild shipping fever, was treated with terramycin in the feed at the rate of 1 gm. per head per day for five days. During a 15-day observation period only one animal required individual treatment.

C-6-175. Thirty-one 360 lb. calves in a stockyard exhibited advanced signs of shipping fever. They received 1.5 gm. terramycin in the feed daily for five days. On the seventh day, three of the animals were given additional individual treatment, but no others were subsequently treated and there were no deaths.

B-57-1 Fifty-five 730 lb. steers and 62 400 lb. heifers with signs of shipping fever were given a feed containing 1,000 gm. terramycin per ton for five days. The heifers received one pound of feed per day and the steers two pounds. Two steers and none of the heifers required additional treatment and none was lost. The owner reported that the animals recovered and got into shape much sooner than was usual.



Typical of feed lot conditions under which tests reported were conducted.

TABLE 3. Results of Individual Preventive Trials

		C-6 136	C-4 137	C-6 138	C-6 140	C-6 148	C-6 156	C-6 157	C-6 158	C-6 161	C-6 162	C-6 165	C-6 179	C-6 180	C-6 181	C-6 182	C-6 183	C-6 184	C-6 185	C-6 186	C-6 187	C-6 188
Number non-treated controls		50	2800	1000	1200	767	1000	950	890	200	320	763	650	470	512	200	830	431	951	1051	890	1011
Number terramycin-treated		50	777	600	628	645	650	600	660	147	191	200	810	1010	615	450	842	426	936	1106	902	917
Average weight (lb.)		750	550	650	558	425	730	680	675	620	600	500	700	725	437	665	490	530	511	593	935	609
Terramycin per day (gm.)		½	½	½	½	¼	½	1	1	2	1	¾	1	1	2	2	1	1	2	2	2	2
Days on medication		4	8	8	8	5	3	3	3	3	3	5	5	5	4	4	5	5	4	3	4	4
Required addn. treatment																						
Per Group	Control	7	36	18	76	196	5	2	9	8	3	200	25	4	3	1	49	63	44	69	66	52
	Tm-fed	0	0	0	0	20	0	0	7	0	2	14	4	5	0	0	13	22	12	22	26	22
Per 1000	Control	140	13	18	63	256	5	2	10	40	9	262	38	8.5	6	5	59	145	47	65	74	51
	Tm-fed	0	0	0	0	31	0	0	11	0	10	70	5	5	0	0	15	52	13	20	29	24
Deaths																						
Per Group	Control	0	4	2	0	33	1	0	0	0	0	15	0	1	1	1	4	4	5	5	6	5
	Tm-fed	0	0	0	0	6	0	0	0	0	0	2	0	4	0	2	1	1	1	1	1	2
Per 1000	Control	0	1.4	2	0	43	1	0	0	0	0	20	0	2	2	5	5	9	5	5	6.6	5
	Tm-fed	0	0	0	0	9	0	0	0	0	0	10	0	4	0	4.5	1	2.5	1	1	1	2

B-57-2. Among a herd of 300 calves of about 400 lb. each, which recently had arrived in a feed lot, many were listless, and suffered diarrhea and nasal discharge. They were placed on a ration containing 500 gm. terramycin per ton for five days. Two calves died before the medicated feed arrived, but at the end of the feeding period symptoms had been eliminated. Improvement was noted in 48 hours and there were no more deaths.

B-57-3. In a lot of 250 calves of 350-400 lb., shipping fever symptoms definitely were evident upon arrival in the feed lot. They were placed for five days upon a medicated ration containing 500 gm. terramycin per ton. Symptoms subsided and one calf was lost. Normal loss expectancy, according to the owner, is two or three in a group of this size. He commented that this group got started on feed better than any in his previous experience.

B-57-4. A group of 335 calves bought at 406 lb. arrived in the feed lot averaging only 370 lb. General condition of all may be described as poor: Some were scouring and exhibiting signs of shipping fever. These animals were placed upon a feed containing 500 gm. terramycin per ton. By the end of the first five days they were definitely improved, but because of their poor initial condition, terramycin feeding was continued for ten days. Only one animal required individual treatment. The owner stressed the labor and time saved by this method of preventive action against shipping fever.

Discussion

An important consideration in feeding antibiotics to cattle, whether for therapeutic or nutritional purposes, is possible action of these drugs upon the rumen organisms which are essential to the conversion of feedstuffs by cattle. As reported by Hardie, *et al.*,[3] from determinations of cellulose digesting capacity, there is only a slight initial depression of rumen function from terramycin feeding. The lowering is transient and the rumen microflora readily adjusts to the presence of the antibiotic.

It is therefore evident that terramycin-medicated feeds used under the conditions of these trials are not only effective but are not likely to adversely affect rumen function. This method of mass treatment has the advantage of reducing labor as animals need not be caught and handled for individual treatment. The antibiotic can be included in cubed, pelleted or loose feed and the same medicated feed supplement can be used for sheep as well

as for beef cattle. Unconsumed portions can be stored and used later.

This method fills a need in practice, as the effectiveness of biologicals intended for the prevention or treatment of shipping fever has been increasingly called into question[3,4,5] in the past several years.

Summary

Data are reported on 21 preventive trials and six treatment trials with an aggregate of over 30,000 cattle. Trials indicate that the shipping fever complex can be controlled by feeding for from three to eight days (majority three to five days) a supplement containing a high level of the broad-spectrum antibiotic. In preventive trials, further medication was required by 55 per 1,000 of 16,936 controls and by 12.8 per 1,000 of 13,162 fed terramycin. Deaths were 5.1 per 1,000 in controls and 1.6 per thousand in treated groups. Treatment studies in six lots in which the shipping fever complex was present at the start of the test revealed that medicated feed brought recovery in most cases. These trials were conducted in commercial feed lots.

It is suggested from these findings, as a practical procedure to feed terramycin for three to five days as soon as the animals are received in the feed lots. The rate would vary with the size of the animals from 0.5 gm. per day for those up to 450 lb. and 1.25 to 1.50 gm. per day for those weighing 750 lb. and over.

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There are now resident in the United States approximately 18,000 veterinarians of whom 4,000 specialize in small animal practice in 2,000 establishments (small animal hospitals and clinics.)

Susceptibility to Brucellosis

Unvaccinated cattle are susceptible to brucellosis without regard to age, according to recently reported studies.[6]

It has been generally accepted that pregnant heifers were more susceptible to brucellosis than mature cattle. This was evidenced by the high abortion rate among such heifers in infected herds. This new work, however, reveals that factors other than susceptibility have been responsible for the abortion rates noted. A most significant factor is management.

Heifers are ordinarily maintained separately from adult animals until breeding age. If they are placed with infected animals at this time, heifers receive an initial and usually severe exposure to Brucella. This then results in a relatively high abortion rate in heifers, with a concurrent buildup of brucellosis infection in the herd.

The findings relative to susceptibility are of importance primarily in research since selection of suitable experimental stock is simplified thereby enabling effective use of cattle of various ages. It also gives more accurate standards for immunological study of vaccinees.

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Treatment of Anthrax

Since bovine anthrax is the matter of widespread interest and concern to both livestock owners and veterinarians in some of the Midwest states because of an outbreak in this region, it is well to bear in mind that the vegetative form of the anthrax organism appears to be quite vulnerable to the action of certain antibiotics. Veterinary literature records that combinations of penicillin and oxytetracline (terramycin),®[1] or penicillin and chlortetracycline (aureomycin),®[2] if treatment is started early in the disease, is frequently followed by recovery. Certainly all sanitary precautions must be observed and state and federal sanitary officials must be consulted when the treatment of valuable breeding and dairy animals is to be handled in this manner.

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[6]Goode, E. R., *et al.*, Relationship of Age to Susceptibility of Nonvaccinated Cattle to *Brucella abortus*. *Am. Jour. Vet. Res.*, 18;279 (Apr.), 1957.

®[1]Chas. Pfizer & Co., Brooklyn, N. Y.

®[2]American Cyanamide Co., Fine Chemicals Div., Pearl River, N. Y.

The Editorial Policies of VETERINARY MEDICINE

Since its establishment in 1905, the objective of the magazine now familiar to thousands of readers as VETERINARY MEDICINE has been to provide the practitioner with information not available elsewhere. Fifty-two years of continuous publication have provided the journal with its abiding faith in the profession.

The present editors appreciate that changes in character of all sorts of endeavor are inevitable. They appreciate the vital necessity of keeping abreast with trends that may influence the direction of professional effort. For these reasons an occasional analytical review is indicated to establish a reasonable estimate of the present situation as well as what may be necessary in the way of future adjustment. Every effort is made not only to get on the right track but to stay on it, and to keep moving steadily ahead. Only by these means is forward movement provided a substantial foundation. VETERINARY MEDICINE has undergone a rather extensive evolution. It must be admitted that it has left the profession with a product that may be short of perfection. It has, nevertheless, performed a prodigious feat, and because of this it has been recognized for convincing accomplishments. It has furnished leadership and encouragement in many professional ramifications that have appeared within the veterinarian's scope and from which the profession has gained importance among professions.

The editorial policies of this journal will continue to be traditional to the policies and plans which have directed its operation for over half a century, but will be subjected to the transforming touch of evolutionary science and technology. VETERINARY MEDICINE has a formal past not to be relegated to the limbo of oblivion. It also has a defined future with meaning and continuity.

Industry trends of the past ten years have recently cast a firmer shadow of things to come. Agriculture continues evolutionary change that perhaps received an early stimulus during the war years. The trend toward larger units, corporate farming and livestock operations, have proved their value as profitable business ventures. With these changes toward bigness have come efficiency of operation and lower cost of production. Examples are hugh cattle and swine feeding operations, pig hatcheries, broiler production operations, and others involving all or nearly all domestic food producing animals.

The trend in these relatively vast operations or business ventures is toward ideals concerning matters of sanitation, management, et cetera. Certainly intelligent operators appreciate too the loss hazard of disease and the value of preventive medicine. On this hinges the future change in concepts of veterinary practice as has been referred to so frequently, *i.e.*, more emphasis on disease prevention and prophylaxis as herd problems, less on salvage of individuals. This also emphasizes nutrition as it pretains to the maintenance of herd health in addition to its qualities for growth and production.

These trends do not mean that veterinarians should be encouraged to adjust their practices overnight. They do mean that such trends ought to be considered as plans are made for the future. The small farm unit now has a place and will continue to be an important portion of the American farm picture for many years. It is, too, a favored way of life that is attractive to many.

By methods proved sound by experience, VETERINARY MEDICINE is dedicated to explore every possible lead of potential value; encourage correspondence with the best qualified; keep alert to new ideas; sound out newer information, and present these items to the practitioner at the earliest possible date. In this respect it is expected that this journal will continue to function in many respects as a free and open forum with ethical restrictions. Anyone qualified to have an opinion may be given space to present that opinion exactly as he would be extended the floor of his professional assemblies. All matters will be open to critical analysis. Articles offered on these pages will bridge the gap between conclusions of research work and experience of tried and successful practitioners, incorporating these findings in proper comprehensive texts.

It is more important today than ever for practitioners to examine current literature religiously to maintain the balance between what has been learned during a period of formal education and what new findings are being pyramided every day on accumulated knowledge. A procedure in common use one day may be modified or even condemned to make room for a better way tomorrow.

To the end of giving practitioners the full picture of perpetually converging opposites, VETERINARY MEDICINE is humbly dedicated.

Nebraska Feed-Veterinary Joint Committee Formed

The first step in what could prove to be a new era of cooperation and mutual understanding between the feed manufacturing industry and the veterinary medical profession has been taken in the state of Nebraska. Feedmen and veterinarians have formed a joint permanent committee to draw up long-term objectives and promote a closer working relationship between the two groups.

The idea for the Joint Committee came from Lloyd Larson, executive vice president of the Midwest Feed Manufacturers' Association, who spoke at the summer meeting of the Nebraska Veterinary Medical Association in Alliance in mid-July. Larson, speaking for the feed manufacturers, offered the full cooperation of his organization and proposed that veterinarians join in an effort to solve mutual problems and work out long standing disagreements. Nebraska's veterinarians responded enthusiastically to this suggestion by adopting the proposal unanimously.

As a result of a meeting held in Lincoln, July 24, with Nebraska feed manufacturers and veterinarians, a joint committee was formed including Harold Fouts, chairman, G. E. Conkey Co.: R. T. Bridge, Norfolk Mills, and Frank Kosisek, Gibbon Feed Mills for the feed industry and Dr. John Aiken, chairman, South Sioux City: Dr. Jack Cady, Arlington, and Dr. F. O. Lundberg, Wausa of the veterinary group.

Mr. Larson has hailed the committee formation as a "significant step forward in the campaign to bring about the accomplishment of a mutual objective of feedmen and veterinarians alike—better service to the farmer and feeder."

In his address, Larson pointed out that both groups have a common interest in desiring to eliminate the "quack" operator from the field of animal nutrition, and that by working together to develop better understanding between the groups the goal will be reached much sooner.

Controversial Drug Additives

Feedmen realize that many veterinarians are opposed to use of drug additives in feed, but farmer customers demand it. Many feedmen wonder where the current trend will eventually lead the industry, he added.

Larson suggested that the new committee might find a fertile field for effort in solving these and other questions of vital interest to both groups, and he proposed that committee members and officers of both organizations attend meetings of the other group to gain a better understanding of their objectives and programs. Perhaps future research could aid in solution of many of these problems.

Working in this way, he envisioned the Joint Committee as becoming a strong link between allied interests and a guiding force for the betterment of animal nutrition. If it works in Nebraska, he declared, other states may join in the plan until full and complete cooperation is attained that can not help but lead to a greater future for both the feedman and the veterinarian.

An official session of the Joint Committee in Nebraska was held on Sept. 5 in Lincoln for the purpose of formulating plans for participation in the Nebraska Formula Feed Conference at Nebraska University Oct. 18 and at the annual meeting of the N.V.M.A. in December. Officials of the Nebraska College of Agriculture have offered their full cooperation as advisors to the committee, as has Dr. Morris Erdheim, of Dawes Laboratories in Chicago, department editor of VETERINARY MEDICINE in Veterinary Nutrition and chairman of the National Veterinary Nutrition Committee, who also attended the first Joint Committee meeting.

Members of the Nebraska Feed-Veterinary Joint Committee are: Standing l. to r.: R. T. Bridge, Norfolk Mills, Norfolk; Dr. F. O. Lundberg, Wausa; seated l. to r.: Dr. Jack Cady, Arlington; Harold Fouts, G. E. Conkey Co., Nebraska City; Dr. John Aiken, South Sioux City; and Frank Kozisek, Gibbon Feed Mills, Gibbon.

Small Animal

SECTION

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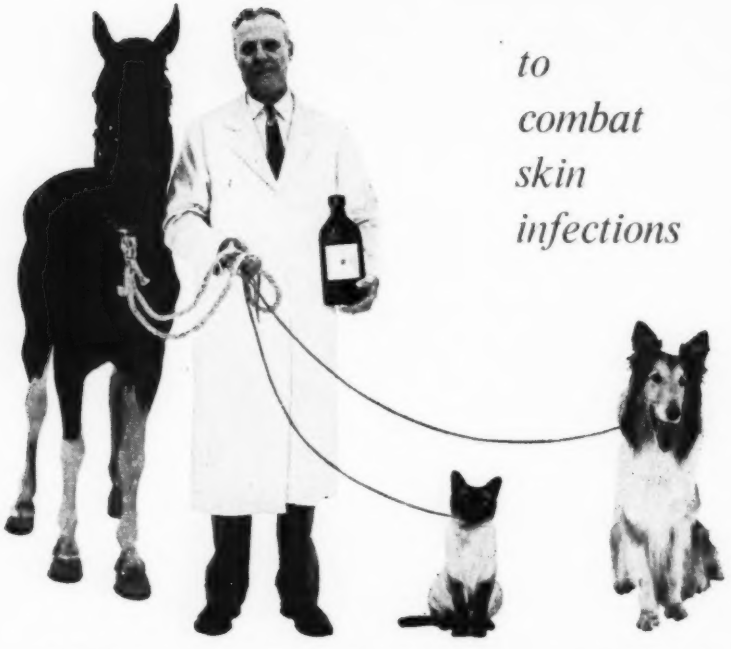

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Canine Cataract Surgery: Suggested Technic For The Occasional Operator

RALPH C. VIERHELLER, D.V.M., Whittier, California

SURGICAL procedures for the relief of blindness in animals are described in some of the most ancient writings on veterinary medicine. Publius Vegetius, about the end of the fifth century A.D., prescribed couching for cataract in his *Mulomedicina sive Ars Veterinaria.*[1] Far better technics than that of displacing the opaque lens into the vitreous body are known today, but still the removal of cataracts is not too common in veterinary surgical practice. Is this because of the imperfect vision that results? Is it because of the hazards of adverse sequelae? Or is it simply that suitable standardized technics have not been established for the animal patient?

Canine practice provides frequent opportunity for the performance of cataract surgery. While the vision that results is imperfect at best, many dog owners are grateful for the restoration of even limited vision for their pets. Smythe states that in examining the fundus of a canine eye from which the lens has been removed, the plus 13 D or plus 15 D lens of the ophthalmoscope must be used. In some of the small breeds, he states, plus 8 D has proved sufficient.[2] Magrane evidently has not found the refractive defect quite so severe. He writes of postoperative cataract patients having plus 7 D hypermetropia.[3] Obviously any eye with plus 7 D to plus 15 D of hypermetropia will not provide the patient with clear vision. In spite of this, we receive such reports as, "He can see a cat at the back of the yard, but may stumble over objects at his feet." Another reports his dog is able to catch a ball on the bounce. One says his dog is able to see other dogs along the street when riding in an auto. These owners are all highly satisfied with the surgical results. No doubt, the plastic lens technic described and demonstrated by Simpson foretells an even better future for the canine patient blinded by cataract.[4] This innovation should provide vision the equivalent of normal.

Much can be learned about technic for cataract surgery from texts written for surgery on the human eye, such as the one by Spaeth.[5] However, anatomical differences necessitate some modification. Magrane has worked out a suction technic for the removal of lens substance from the eye which is well adapted to surgery on the juvenile type of cataract.[6]

The technic which is discussed in the following paragraphs is not too highly specialized for the veterinary surgeon who does only occasional cataract operations. It has produced a good average result for us when used for extracting ripe or mature cataracts. The reader will note that the technic is for capsulotomy extraction. Our experience has been that the tough suspensory ligament that anchors the lens to the ciliary body makes intracapsular extraction too hazardous. The pressure required to tumble or express the lens from the eye within its capsule often is enough to create disastrous vitreous prolapse.

Preparation of the Patient

Preliminary preparation of the patient involves withholding food for eight to 12 hours. Assure a well dilated pupil by applying atropine solution (2% buffered to pH 6.8) to the eye every hour starting four or five hours prior to surgery. Minimize danger of infection by presurgical administration of 300,000 units of penicillin.

Final preparation starts with general anesthesia (nembutal®[1] or other). Clip the hair and prepare the skin of the lids and surrounding area as for any other surgery.

Inject about 5 cc. of cyclaine®[2] solution, diluted to about 0.25 to 0.5%, into the periorbital space. Insert the needle through the skin, then between the eyeball and the dorsal rim of the orbit. This procedure elevates and helps fix the eyeball while blocking the ciliary nerves. A lighter plane of general anesthesia is permissible because of the nerve blocking, a decided advantage in questionable risk cases. Some objection to this procedure has been advanced on the grounds that the proptosis produced is the result of pressure back of the eyeball. In our opinion this is not a real problem, as the slight pressure is uniformly applied to a large part of the globe. Thus, there should be little or no tendency for the vitreous to be pushed out.

Prepare the eye for surgery with a nonirritating antiseptic. We prefer old-fashioned argyrol (10%). Argyrol is placed in the eye several times. Each application is rinsed out with normal saline.

A drape is placed over the eye which provides an opening small enough to shield the surgery from contamination. Two or three towel forceps are required to hold the drape in place.

Instrument Requirements

Instruments needed for performing cataract surgery are: Bard-Parker knife handle with #15 blade, two fixation forceps, keratome, capsule forceps, toothed iris forceps, smooth iris forceps, curved iris scissors, tenotomy

®[1]Abbott Laboratories, North Chicago, Ill.
®[2]Sharpe & Dohme, Inc., Philadelphia, Pa.

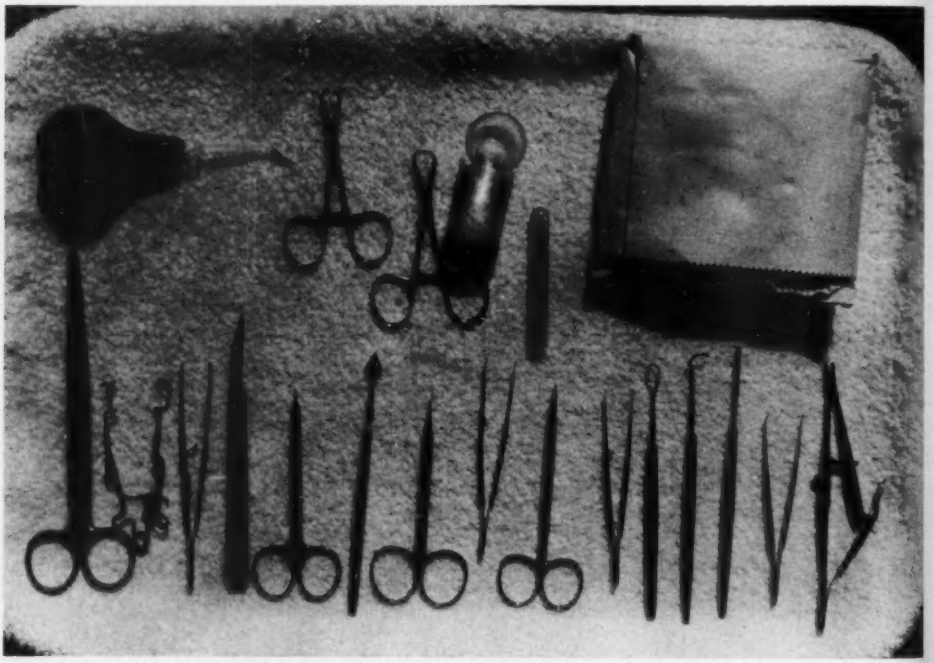

Fig. 1. Top row: Anterior irrigator, towel forceps, solution for irrigating anterior chamber, eye suture, drape pack.

Bottom row: Straight operating scissors, Graefe eye speculum, Von Graefe fixation forceps, Bard Parker scalpel, Stevens tenotomy scissors, Jaeger angular keratome, McGuire corneal scissors, iris forceps (curved, toothed), iris scissors (curved), Fuchs capsule forceps, Lewis lens scoop, Arruga lens expressor, iris repositor, iris forceps (curved, smooth), Kalt eye needle holder.

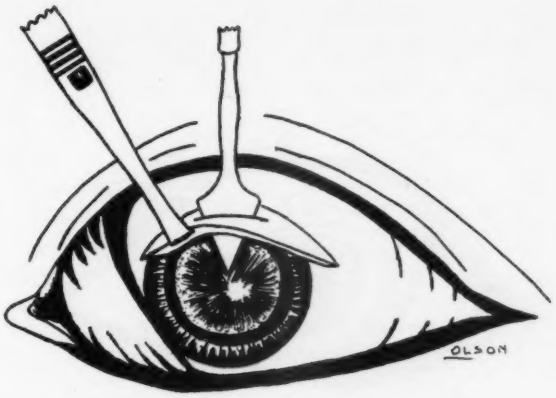

Fig. 2. Incision.

scissors, lid speculum, corneal scissors, lens loop, lens expressor, iris repositor, anterior irrigator, and 000000 eye silk with two atraumatic, curved cutting needles. Good lighting is essential. A head lamp will serve well if overhead lighting is meager. A binocular loupe is optional. Some eye surgeons require magnification; others do not.

Ocassional references have appeared in the veterinary journals suggesting substitutes for proper eye instruments in order to effect economies. This approach is probably a mistake. If one seriously intends to develop skill in performing intraocular surgery, no compromise should be made on instruments. The surgery will be touchy enough under the most ideal conditions.

Surgical Procedure

The first step in the actual surgery is to perform a generous canthotomy at the lateral canthus. This allows for wider exposure of the surgical area. One snip with a sharp scissors will accomplish this aim.

Next the lids are held open widely with a lid speculum. The lower grasp of the speculum should be applied to hold the nictitans back as well as the lower lid. Roberts reports that some European veterinary surgeons avoid a problem with the third eyelid by snipping it at the superior attachment allowing it to be pulled away for better exposure.[7]

A conjunctival flap, 3 or 4 mm. wide is prepared from the bulbar conjunctiva. This is dissected down to the conjunctival limbus. A curved tenotomy scissors makes an ideal instrument for this dissection. An adequate flap should encompass about 2/5 the circumference of the orb. The conjunctival flap thus produced will later be used to close and protect the corneoscleral incision.

The corneoscleral incision is made with a keratome about 1 mm. from the conjunctival limbus. Firm fixation for the keratome incision is obtained by grasping the conjunctival flap with a fixation forceps. Care should be exercised when making the corneoscleral incision to keep the keratome parallel with the iris to avoid excessive shelving of the wound edges. The incision is enlarged to approximately 1/3 to 2/5 of the circumference of the cornea with a corneal scissors.

Note: Larger incisions have been commonly recommended for cataract extraction. Experience indicates that it is better to keep the incision somewhat less than one-half the circumference of the cornea. Incisions approximating one-half the circumference have invariably healed with greater distortion of the curvature of the corneal surface. The resultant astigmatism is certain to further distort the expected hyperopic vision.

A toothed iris forceps is inserted into the anterior chamber of the eye and the free border of the iris grasped. The iris is drawn well out of the incision and a broad iridectomy performed with a single meridional snip with a curved iris scissors. Inevitably a bit is removed from the minor arterial circle of the iris. Thus, considerable bleeding can be expected. This must be controlled before proceeding to the next step. An assistant accomplishes this by gently flushing the anterior chamber with a solution of epinephrine diluted with normal saline to 1:10,000. Either an anterior irrigator or a 10 cc. syringe fitted with a 20-gauge needle may be used as the flushing instrument. Flushing can be done

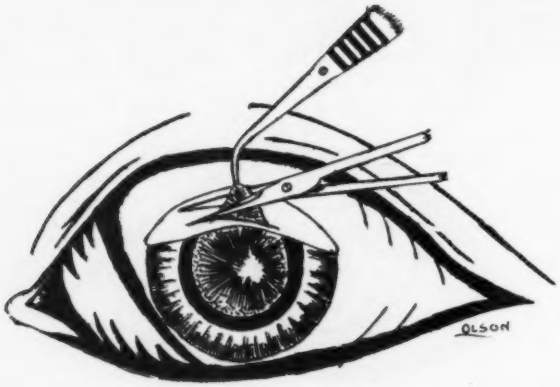

Fig. 3. Iridectomy.

effectively just by the force of the stream without inserting the tip of the needle through the incision.

Once bleeding is controlled, the anterior capsule of the lens is removed as completely as possible. This is done with a capsule forceps. A broad grasp of the capsule is taken with the forceps. Then the forceps is moved to and fro laterally as it is withdrawn. Often one-half or nearly one-half of the capsule will be removed.

Insert the lens loop gently into the wound and under the nucleus of the lens. The lens is then shoved upward and out of the eye with one stroke of the lens expressor across the cornea, using the loop as a skid for the lens. Spaeth[5] speaks of using the loop only as an emergency procedure, but we believe most veterinary surgeons will find the loop method the safest way to remove the lens without excessive risk of producing vitreous prolapse.

Throughout the intraocular procedures, control of the eyeball and the corneoscleral incision is maintained with a fixation forceps grasping the bulbar conjunctiva at the lateral canthus, and another fixation forceps on the conjunctival flap. At no time is the corneoscleral incision allowed to gape. All procedures are performed with the wound edges separated as little as possible.

Just prior to closure the anterior chamber is reformed by filling it with normal saline. This is done in the manner described earlier for controlling hemorrhage from the iris. Any tendency for iris prolapse is corrected by stroking the iris back with an iris repositor or probe.

Closure of the wound is accomplished by suturing the conjunctival wound with a continous suture of 000000 silk. Double armed, curved atraumatic eye sutures are used. Start at the middle of the incision and work with one needle to one extremity of the wound. At this point, if it appears feasible, one may attempt to remove the remaining capsular substance. Slip a non-toothed iris forceps through the yet unclosed portion of the incision, and grasp a free edge of the remaining capsule, withdrawing it from the eye. Close the second one-half of the incision with the unused needle. Do not tie either end of the suture line. Simply draw the incision snug. Snip off suture ends leaving about ¼ in. at each end. This will hold adequately for the seven to ten days that the suture is needed, and makes removal simple. Magrane prefers to incorporate preplaced scleral sutures, McLean technic, for firmer apposition of the edges of the corneoscleral wound.[6] This is an excellent refinement, but rather difficult for the occassional operator. If one does a generous iridectomy, and is careful to see that no iris prolapses into the wound at the time of closure,

Fig. 4. Capsulotomy.

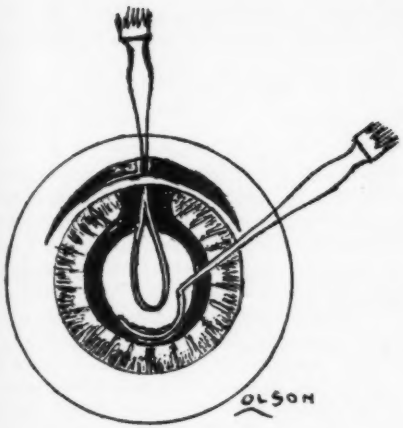

Fig. 5. Lens Extraction.

simple closure of the conjunctival flap appears to be adequate. We have had no problems such as iris prolapse, forward tilting of the cornea or indenting of the healed corneoscleral wound at the 12 o'clock location.

Elaborate bandaging has given less satisfactory results than the simplest bandage we have been able to devise. A 3-in. by 3-in. gauze bandage is simply pasted over the eye with duo-liquid adhesive. The dog's feet are hobbled at normal standing width with bands of 1-in. adhesive. This is an adequate safeguard against the patient pawing at its eye.

Post-surgical Care

Postsurgical therapy is essentially that recommended by Magrane.[8] Daily atropine drops are used to keep the pupil widely dilated. An antibiotic eye salve is also placed in the eye. Our choice for this purpose is bacitracin ophthalmic ointment. Daily injections of 300,000 units of penicillin are given for five days. The patch over the eye is removed and discarded after three or four days. After five to seven days neo-cortef®[a] ointment is substituted for the bacitracin ointment. This seems to hasten the clearing of the cornea, and probably lessens the likelihood of pannus. Stitches are removed, and the dog dismissed from the hospital after seven to ten days. Atropine drops and neo-cortef ophthalmic ointment are dispensed to the owner when the dog is discharged. Owners are instructed to continue both until the cornea is clear. It is advisable to continue atropinizing the eye for about eight weeks, especially if any of the lens capsule is allowed to remain in the eye.

Note: *Acknowledgment is given to Dr. Philip C. Olson, Los Angeles, for the accompanying sketches.*

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Fig. 5. Closure.

Clinical Uses Of Butazolidin®

F. B. OGILVIE,* D.V.M., and M. D. SUTTER,** D.V.M.,
Kansas City Missouri

PHENYLBUTAZONE (3,5-dioxo-1,2-diphenyl-4-n-butyl pyrazolidine) was first synthesized by the Geigy Company of Switzerland in 1948 and introduced into human clinical medicine in 1949. Various workers, Kuzell,[1,2,3] Payne,[4] Fleming,[5] and Denko[6] have demonstrated this drug's clinical effectiveness for acute rheumatism, gout, gouty arthritis, and various other rheumatoid disorders in humans.

Pharmacological Activity

Phenylbutazone has antipyretic activity, being less potent than aminopyrine in this respect according to Goodman and Gilman's textbook. Antirheumatic and anti-inflammatory activity has been well established in the laboratory by Fabre,[7] Domenjoz,[8] Wilhelmi,[9] and Yourish.[10]

Toxicity and Metabolism

Acute and chronic toxicity of phenylbutazone has been thoroughly investigated in mice and rats.[11] Chronic toxicity in dogs was also studied. High doses (250 mg./kg./day orally) caused vomiting and bloody diarrhea after two days. Dose reduced to 200 mg./kg./day orally for 12 weeks, at which time the dog died of an intussusception which apparently was incidental to drug administration. Dogs receiving 10 mg. and 100 mg./kg./day for 90 days had good appetites, gained weight, excreted normal feces, maintained normal blood pictures, and after euthanasia revealed no abnormal pathology macroscopically or microscopically which could be attributed to the drug.[11]

Clinical Use (Review of Literature)

Lieberman[12] reported clinical findings in "about 30 dogs," citing four specific cases. These dogs were diagnosed as having "posterior paralysis (vertebral disc syndrome), painful fractures, arthritis, and painful injuries to limbs and joints." He notes, "The results have been as satisfying as those reported in similar conditions in man." No toxicity was observed using doses up to 800 mg. daily for a ten-year-old English Setter; a maintenance dose of 400 mg. daily was sufficient for normal periods, but for two days prior to hunting the dose was doubled. Other conditions specifically mentioned by Doctor Lieberman which responded to treatment were "localized pain in the stifle, symptoms suggesting the diagnosis of a meniscus injury, posterior paralysis, and multiple fractures of the pelvis." Posterior paralysis due to distemper has not responded to phenylbutazone. In conclusion, Doctor Lieberman states, "Clinical experience in a variety of such cases (painful conditions of the musculoskeletal system) suggests that this drug be considered as a valuable addition to the formulary of veterinary medicine."

Joshua[13] reports 600 mg. given daily to an aged Chow weighing 74 lb. for a period of 14 months. An aged 18 lb. Dachshund received 200 mg. daily until improvement was noted, and the maintenance dose was 100 mg. every other day. In both cases there was objective improvement and no symptoms suggesting toxicity.

Clinical Cases

The accompanying table lists nineteen cases which have been treated recently. It is essentially self explanatory and a minimum of discussion follows it. These cases were all observed in private practice. The dogs were privately owned and medication was in some instances administered by the owner.

Summary of Cases

Cases 15 and 16. No attempt was made to substantiate possible disc herniation. While the results in table indicate "good," it is only to differentiate these from the posterior paralysis cases which exhibited immediate cessation of symptoms, with no recurrence. The results were excellent in that both animals have made full recoveries.

Cases 9, 12, 13, and 18. All showed immediate relief of symptoms. Results were tabled as "good" because recovery was not permanent but recurred with changes in general health, climatic changes, et cetera, and required periodic treatment. In so far as relief

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**Department of Clinical Medicine, Jensen-Salsbery Laboratories, Inc.
®Geigy Chemical Corp., Switzerland.

of symptoms while on medication is concerned, they would all be listed as excellent.

Cases 6, 8, and 11. These were cases which would not have been aided especially by routine orthopedic immobilization, and received enough help from butazolidin to make them ambulatory.

All other cases (1, 2, 3, 4, 5, 7, 10, 14, and 19) responded to medication within 24 hours and have had no recurrence of lameness or weakness.

Administration was on the minimum side for dosage, as these are all client's animals. In no case were any unfavorable side reactions or sensitivity to the phenylbutazone observed. All patients ate well, retained food, and excreted normal feces. No supplementary treatment was given except as noted.

Summary

In most cases, rapid response of patients to phenylbutazone was amazing. Some dogs had

TABLE 1.

Species		Age (yr.)	Weight (lb.)	Diagnosis	Dose Tab. Daily Duration	Total Amount Administered	Results	Undesirable Reactions	Other Therapy
1. Dachshund	M	2	22	Posterior paralysis	4-4 days	16	Excellent	None	2 inj. B_6 (100 mg. ea.)
2. Boxer	F	3	60	Posterior paralysis	6-4 days	24	Excellent	None	1 inj. B_6 (100 mg.)
3. Shepherd Mix	F	4	45	Posterior paralysis	4-4 days	16	Excellent	None	
4. Brittany Spaniel	M	9	65	Posterior weakness	4-6 days	24	Excellent	None	1 inj. B_6 (100 mg.)
5. Weimaraner	M	5	80	Prostatitis & Posterior paralysis	4-5 days	20	Excellent	None	1 inj. Stilbestrol (5 mg.)
6. Airedale	M	3	75	Front leg fracture 3 weeks duration	6-11 days	66	Excellent	None	
7. Boxer	M	6	60	Prostatitis & Posterior weakness	6-5 days	30	Excellent	None	1 inj. Stilbestrol (5 mg.)
8. Dachshund	M	4 Mo.	15	Strain-left tarsals	4-5 days	20	Excellent	None	
9. Bull Terrier	M	8	60	Chronic arthritis (hip) due to old injury	6-5 days	30	Good	None	
10. Fox Terrier	M	2	16	Prostatitis & Posterior weakness	4-5 days	20	Excellent	None	
11. Shepherd-Cocker	M	3	40	Leg injury (right fore-elbow)	6-4 days	24	Excellent	None	
12. Boxer	M	7	60	Posterior arthritis (hip and stifle)	6-6 days	36	Good	None	
13. Terrier Mix	N	6	30	Rheumatism (general)	4-6 days	24	Good	None	
14. Shepherd Mix	N	5	45	Posterior weakness	6-6 days	36	Excellent	None	
15. Dachshund	F	4	26	Posterior paralysis	4-27 days	108	Good	None	
16. Dachshund	M	3	22	Posterior weakness	4-5 days	20	Excellent	None	
17. Dachshund	M	3	22	Acute prostatitis with much pain and posterior paralysis	4-23 days	92	Good	None	Stilbestrol 2 inj. 5 mg. each and stilbestrol tablets 1 t.i.d. (1 mg. each)
18. Irish Setter	M	12	60	Lame right hip with pain (arthritis)	6-10 days Repeated	60 100 160(total)	Good	None	
19. Boxer	F	3	55	Posterior paralysis	6-6 days	36	Excellent	None	

recurrence of lamenesses when drug administration was stopped, but according to Joshua and others and because of the drug action, this is not surprising. The symptomatic relief of these geriatric patients is most gratifying to the owners as well as to the patient.

The 19 cases reported using orally administered phenylbutazone clearly indicate the need and some of the possible uses in small animal therapy. Phenylbutazone is a valuable therapeutic agent in the treament of many lamenesses and musculoskeletal weaknesses of dogs. All patients receiving medication have responded favorably, usually within 24 hours of initial therapy.

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Attendance at the Cleveland convention reached a total of 3,368. Weather conditions were ideal and facilities excellent. Work of committees including the Local Arrangements Committee headed by Dr. H. B. Roberts and Dr. H. E. Jensen, co-general chairman, are to be commended for what proved to be a well-organized and efficiently conducted session.

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Annual conventions give excellent opportunity for favorable public relations. Mr. Brian M. Forster of the A.V.M.A. Public Relations Department advised that this year six hours and 22 minutes of radio and television time was given to matters concerning what veterinarians were doing for the benefit of the public.

Research Project to Study Skin Diseases of Dogs

The first of a series of nation wide research projects to study canine skin diseases, one of the major problems confronting the veterinary profession today, has been launched at the University of Minnesota. This program, sponsored by the Mark L. Morris Animal Founda-

Dr. Robert M. Schwartzman performing a skin biopsy on a patient under his care.

tion, Denver, will consist of research problems at several veterinary schools in the United States. The purpose of this project is to establish factual information concerning skin diseases.

The Minnesota grant of $2,000. was made to Dr. Robert M. Schwartzman, Division of Veterinary Medicine and Clinics, University of Minnesota. Doctor Schwartzman will study between 300 and 500 dogs with skin diseases during the next 15 months. He will prepare complete case histories, conduct clinical examinations, take color photographs, obtain biopsy specimens and study the microscopic pathology of the cases observed. Every effort will be made to correlate the pathology and etiology of the dermatoses studied.

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During their convention in 1955, the Dog Food Manufacturers' Association announced that nearly $350,000,000. are spent annually for more than 2,000,000,000 lb. of food prepared for pets.

Therapy for Infectious Laryngopharyngitis (Kennel Cough) in the Dog

M. HOWARD MILMAN, V.M.D.,
Jackson Heights, New York

Whether kennel cough should be termed infectious laryngopharyngitis or tracheobronchitis could be a moot point, as is some other veterinary nomenclature. Laryngopharyngitis would be the designation preferred by those who view this condition as a primary inflammatory catarrhal involvement of the larynx and pharynx, which, by extension, often secondarily and similarly involves the trachea and bronchi.

Laryngopharyngitis (kennel cough) is too well-known a condition to require detailed description to veterinarians. One practitioner summarized it in eleven words: "Persistent coughing in a dog, which causes its owner great anxiety." This description, of course, is gross oversimplification. However, it does emphasize that some of the older veterinary terms for diseases are cases of the tail wagging the dog in that prominent symptom rather than the basic cause is emphasized. In this instance, the hard, deep, loud, dry, severe paroxysmal cough overshadows the inflamed, catarrhal, edematous, swollen state of the larynx, pharynx, trachea, and bronchi, without which there would be no cough, and which, when relieved, removes the stimulus to coughing.

Roenig[1] emphasizes the following: "That the disease (kennel cough) is difficult to treat is manifested by the many so-called remedies which have been suggested and tried. Dogs are presented to the clinic regularly with a history of infectious tracheobronchitis. Many have received various types of therapy with poor results." Fortunately, the disease tends to be self-limiting. But symptoms of three to four week duration can be a difficult time for both animal and client, even when no secondary infection of moment, such as pneumonia, becomes a complication. Therefore, easing or eliminating symptoms during the period of self-limitation is important.

Until about two years and some 50 cases ago, my treatment for kennel cough rather closely paralleled the symptomatic, protective, and palliative regime recommended in current veterinary literature.[2,3] This included, (1) isolation, (2) proper hygienic measures, (3) good nutrition, (4) good nursing care, (5) inhalation of steam, (sometimes containing tincture of benzoin), (6) an antibiotic (combiotic, Pfizer) to help control any secondary infection, and (7) at times an opiate cough sedative.

Then I expanded my treatment in conformity with the acquired concept that measures for laryngopharyngitis should be "physiologic therapy," rather than just "symptomatic" therapy. By physiologic therapy, of course, is meant measures which help nature restore the laryngeal, pharyngeal, tracheal, and bronchial tissues to a normal state. (Apropos of this, one should bear in mind that although cough is the most evident and often the most distressing symptom of kennel cough, it is but a reflection of the basic abnormal physiologic state of the tissue of the throat and respiratory passages. Cough is not evident until this state of physiologic abnormalcy comes into being. Cough eases as physiologic normalcy is being regained. And cough ceases when the tissue is again normal.)

My physiologic, and principal, therapy for kennel cough is a combination of two bronchodilators, a sedative, and an expectorant, marketed as quadrinal®.

The ephedrine and theophylline components of this drug are excellent relaxants of smooth muscle spasm, particularly of the trachea and bronchi. They also effectively reduce edematous swelling of the tissue of the respiratory tract, which invariably develops in laryngopharyngitis. It is because of its ephedrine and theophylline constituents that quadrinal helps ease the difficult breathing and the forced swallowing and coughing of kennel cough.

These tablets also contain an optimum expectorant dose of potassium iodide which liquifies the thick, tenacious accumulated mucus, thereby reducing the need for coughing to mobilize and evacuate this exudate. Furthermore, each tablet contains a sedative dose of phenobarbital. This is an essential ingredient, as in kennel cough the animal should be kept nervously and physically quiet. This alone, reduces the frequency and severity of episodes of paroxysmal coughing.

Since using quadrinal, I have found less need for an opiate cough sedative. This is advantageous, as it reduces the possibility of opiate-induced respiratory embarrassment in a condition in which pulmonary function is not up to par.

A review of the case histories of my kennel cough patients shows that the oral dose of this drug ranged from ½ tablet twice daily for a 19-year-old male Chihuahua to 1 tablet three

®Knoll Pharmaceutical Co. formerly Bilhuber-Knoll Corp., Orange, N. J.

times daily for a five-year-old male Boxer. A seven-year-old male Siamese cat with laryngopharyngitis, wheezing and loud cough responded excellently to ½ a quadrinal tablet every 12 hours. My dose of combiotic ranged from 0.5 to 1.5 cc., and the amount of codeine per dose of the opiate cough mixture was from ⅛ to ¼ gr., depending upon the breed and size of the animal and the severity of the cough.

My results from quadrinal in kennel cough have been consistently good, particularly in respect to cough, breathing, bronchial spasm, and earlier return to physiologic and functional normalcy of tissue and structures of the pharynx, larynx, trachea, and bronchi. Another advantage gained is the lesser need for an opiate in a situation in which there often is already existing respiratory depression and, sometimes, vomiting.

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APPLIED IMAGINATION. PRINCIPLES AND PROCEDURES OF CREATIVE THINKING, Alex F. Osborn, Ph. M. 317 pages. Charles Scribner's Sons, New York, 1956.—Price not given.

Creativity lies close to the roots of our American way of life. It sustains science in general, and scientific experimentation and testing in particular. It is the *sine qua non* of the medical professions, including our own.

Alex Osborn, co-founder of Batten, Barton, Durstine, and Osborn, maintains that the art and science of creativity can be taught. What's more — it can be learned, and he goes a long way to prove it. His book presents the principles and procedures necessary to creative thinking and doing. Steps in the creative process are outlined and methods of activating the sluggard imagination suggested.

Osborn is an advocate of and pioneer in the "brainstorming" approach to a problem — bringing many factful and fanciful solutions to the fore and choosing the most likely ones.

A great deal of research into creativeness has gone into this book. The whole has been spiced with examples and anecdotes from the lives of many creative men and women from Aristotle to Zeckendorf, including such prominent men of medicine as Koch, Pasteur, and Fleming.—*Kenneth B. Haas, D.V.M.*

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THE RIGHT WAY TO KEEP PET FISH, by Reginald Dutta, B.A., F.Z.S., 156 pages. Elliot Books, Kingswood Surrey, England, publishers. Price—7 shilling, 6 pence, or about $1.50 including postage.

Almost every veterinarian is confronted from time to time with problems presented by clients who have taken up the ever increasing hobby of fish keeping. Since a veterinarian has little or no training in the treatment of fish, he should at least familiarize himself with the basic nomenclature of the amateur aquarist, and perhaps maintain a ready index on where such a client might take an aquatic pet for treatment. Almost all large cities in the United States have commercial fish tanks which are staffed by qualified aquarium keepers.

To this end, The Right Way to Keep Pet Fish would be of interest to veterinarians. Written by a staff member of Fish Tanks Ltd., this work is neither technical nor comprehensive, yet it fulfils a definite need.

Many aspects of fish keeping are as demanding as the medical care of disease stricken animals. This hobby has taken hold in England and has no inconsiderable number of advocates in the United States. Recognition must be given the fact that the march of events has not bypassed the fish keeping world, and that the goldfish in a bowl is as obsolete as the pet dog under the porch. Scientifically balanced aquaria require specialist knowledge as surely as do small animal hospitals. This is the story these pages tell.

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Dart Drugging Demonstrated at A.V.M.A. Convention

Capturing wild animals by drugging them with a treated dart fired from a specially designed gun was demonstrated on closed-circuit television. The demonstration was similar to experiments carried out in Georgia by veterinarians and others in cooperation with conservation officials.

A number of drugs have been employed including curare-like agents that cause paralysis. Tests are underway to use other agents that will improve effectiveness and range of gun and darts.

Animal Studies With Tolbutamide, Orally Effective Anti-Diabetic Agent

J. LAVERE DAVIDSON,* D.V.M., KENNETH B. HAAS,* D.V.M., and NOLEN D. CONNOR,** D.V.M., M.S., Kalamazoo, Michigan

ORINASE® (tolbutamide), an orally effective hypoglycemic agent, is a new therapy for human patients suffering diabetes mellitus. It is a synthetic chemical compound, not a naturally occurring endocrine substance nor an endocrine derivative. It is structurally unlike any of the hormones now known to participate in regulation of carbohydrate metabolism. It is not an oral insulin. It has no blood sugar lowering effect in the absence of pancreatic beta cells.

Chemistry

Orinase may be classified chemically as a sulfonylurea. It is a pure white crystalline compound practically insoluble in water but forming water-soluble salts with alkalies. It is a sulfonamide derivative, not a sulfanilamide derivative. While it is closely related to the "sulfa drugs," it differs in several important aspects: (1) It is devoid of antibacterial activity, having no effect on bacterial inhabitants of the intestinal tract which synthesize essential vitamin factors, (2) it can not be acetylated, and (3) it has no significant effect on the thyroid gland (non-goitrogenic).

Pharmacologic Action

The chronicity of diabetes, and the benign nature of insulin used in its management, would dictate that any new therapeutic agent to be used in the control of the disease would have to undergo a most critical and exhaustive scrutiny. To this end, orinase received broader and more intensive clinical evaluation prior to release to the diabetic population than any compound placed on the drug market during the past ten years. Certain of these investigations have been carried out in laboratory animals.

Absorption. When administered orally, orinase is rapidly absorbed. In dogs given a single oral dose (100 mg. per kg. body weight), orinase is detectable in the plasma within one hour. Plasma concentrations are usually maximal at three to four hours, and then decrease gradually.

Distribution. Radioactive orinase given to rabbits and dogs, in order to study distribution, is detectable in blood, bile, and urine, however, none remained in the pancreas, liver, kidneys, and brain. There was no evidence of accumulation or deposition of labelled orinase in any vital tissues.

Excretion. Approximately 90% of the administered dose to dogs is excreted in the urine within 3 days.

Blood Sugar Lowering Effect. Orinase is orally effective in lowering blood sugar in the intact rat, rabbit, guinea pig, cat, dog, and monkey. In the dog, the threshold oral dose is about 2.5 mg. per/kg. of body weight. Within a few hours after single oral doses of 5, 25, or 100 mg. per kg. of body weight, there is at least a 30% reduction in blood sugar and significant degree of hypoglycemia persists for 24 hours following the smaller doses and for a minimum of 36 hours following the 100 mg. per kg. dose. When the latter is administered daily over a six-month period, blood sugar level is maintained at about 60 mg.%.

The blood sugar lowering effect of orinase is unaffected by either hypophysectomy or total hepatectomy, is accentuated by adrenalectomy, and is abolished by either abdominal evisceration, total pancreatectomy, or alloxan-induced extirpation of the pancreatic beta cells.

Mode and Site of Action. The particular mechanism by which a drug produces a certain effect upon the body is frequently difficult to determine. This has been the case with insulin. Although insulin has been used for more than 30 years, little is known about the mechanism of its action. Insulin increases utilization of

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®The Upjohn Company brand of tolbutamide. Discovered and synthesized in the Pharmaceutical Laboratories of Farbwerke Hoechst, Inc., Germany, and developed in this country by The Upjohn Company, Orinase has been under intensive study since 1955.

glucose by the peripheral tissues; how this is accomplished still remains a mystery.

Several theories have been advanced concerning the specific mechanism of action whereby orinase reduces the blood glucose level, but conclusive definition of the mode of action can not be made. Orinase's blood sugar lowering effect is independent of the pituitary, adrenocortical, and neural mechanisms that exert a regulatory effect on carbohydrate metabolism. It does not inhibit the hyperglycemic response induced by epinephrine or glucagon, and it has no effect on the renal threshold for glucose excretion. While there is evidence of an inhibitory action on certain hepatic enzyme systems participating in the transformation of certain non-glucose precursors to glucose, the blood sugar lowering effect of orinase is still evident in the totally hepatectomized animal.

A preponderance of evidence supports the concept that beta cell stimulation and the consequent release of endogenous insulin is the principal action. Orinase may also act by protecting insulin from excessive insulinase inactivation, or by indirectly increasing utilization of glucose by the tissues. Actually, it may have multiple rather than single effect upon sugar-regulating mechanisms. One factor relative to mechanisms that is conclusively established—it will lower blood sugar only in the presence of a functional source of endogenous insulin.

Toxicity. Acute and chronic studies in animals demonstrate a low order of toxicity. In the mouse the oral LD_{50} is approximately 2.15 gm. per kg. of body weight; in the rat the oral LD_{50} is 4.0 gm. per kg. of body weight. Dogs given orinase for six months in a daily dose of 30 mg. per kg. of body weight (which is about two times the average effective daily maintenance dose for the orinase responsive human diabetic patient) exhibited no observable signs; there were no significant changes in body weight, behavior, or gastrointestinal function. Urine and blood were checked monthly and there were no abnormal findings. When the animals were sacrificed, careful postmortem studies of the vital organs revealed no pathological changes attributable to the drug. At doses of 100 mg. per kg. and over daily, slight antithyroid effect, anorexia, and moderate hepatotoxic effects were observed.

Discussion

In the 35 years which have elapsed since insulin was introduced as a treatment for diabetes, the management of canine diabetes mellitus has remained essentially unchanged; diet and insulin are still the keystones to successful control. Today, however, more is known about the disease and better insulins have become available.

Despite the fact that insulin is effective in reducing hyperglycemia and glycosuria in the diabetic animal and can seemingly correct abnormalities prevalent in diabetes, it still has shortcomings. The disadvantages of insulin are: (1) It must be administered hypodermically, (2) it is a perishable biologic; it must be refrigerated, (3) there is always the threat of insulin overdosage or acute hypoglycemic response, (4) prolonged-acting insulin may produce insidious effects, (5) there may be fat dystrophy (lipodystrophy) at the site of injected insulin, (6) allergic reactions may appear, (7) anaphylactic reactions may occur, and (8) there may be insulin resistance.

Because diabetes mellitus is infrequently diagnosed in animals, adequate clinical material has not been available for complete evaluation of orinase in veterinary medicine. No conclusions can be drawn at the present time from the limited number of animal cases treated.

Summary

Orinase is an outstanding advancement in the search for an orally effective antidiabetic agent. There is promise that the drug may make it possible for animal owners to abandon the yoke of daily injections of insulin in diabetic animals. Its discovery has added new impetus to research in the field of diabetes.

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Number of human deaths from rabies rose from five in 1955 to nine in 1956, according to report of Committee on Public Health. Four of these reported for 1956 occurred in Dallas, Tex. Reported cases of rabies in the United States involving all species was reduced from 5,844 in 1955 to 5,124 in 1956.

Cage for Postsurgical Recovery

R. M. STONE, D.V.M., Detroit, Michigan

One of the problems confronting the anesthesiologist in small animal practice is the patient's self-mutilation due to the temporary incoordination during postsurgical recovery. With an answer to this problem in mind, an attempt was made to produce a padded enclosure.

Important considerations were the following:

1. Cost
2. Assembling ease
3. Storage
4. Cleaning
5. Durability

Two units were designed. One, mounted on casters is illustrated in fig. 1. It is portable and intended for large patients. The other (fig. 2.) fits into an existing cage.

Portable Unit

Size may vary as desired; the illustrated has a base dimension of 36 in. x 36 in., side 30 in. x 36 in.

Fig. 1. Portable Unit. Photograph of three sides and base in position and patient under anesthesia. Can be disassembled for storage.

This will handle most of the larger breeds of dogs and is a convenient size for storage when not in use.

Cage Unit

This unit is made according to the size of the cage, and is flush with its walls. It can be easily removed after use, thus freeing the cage for hospitalization of the patient.

Units now in use are made of ¼ in. plywood reinforced by 1 in. x 2 in. white pine framing.

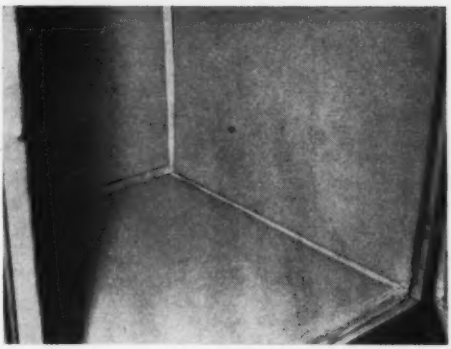

Fig. 2. Cage unit. Photograph illustrating four units, base, one side, back, and edge. Completed unit consists of base, and four sides (all padded) to fit within the permanent hospital cage unit.

Padding is ¼ in. foam rubber covered with plastic. Hardware for assembling is available at any hardware supply store.

Those interested in either of these units as shown who desire further information as to cost and availability may address the writer.

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Feline Pneumonitis and Panleucopenia

The virus of feline pneumonitis becomes modified following continuous propagation in the chick embryo, according to Dr. R. J. Johnston, and such virus is a safe and efficient immunizing agent.

In his address presented at the Midwinter Conference of the California State Veterinary Medical Association, Doctor Johnston explained that immunity induced was of short duration, approximately three months. Though this fact may limit its usefulness to some degree it should prove valuable for the control of epidemics in kennels and hospitals.

Also reported by Doctor Johnston was new study of the clinical and micropathological signs of feline panleucopenia made in connection with the propagation of virus for vaccine production. In a study of over 1,000 cats, average susceptibility rate was about 60%, incubation period averaged six days, W.B.C. count of nonsusceptible animals was 16,000 per cmm., and the average for susceptible cats dropped to about 2,000 per cmm. He stated that these studies emphasized that inclusion bodies occur rarely, if at all, and are therefore not a useful diagnostic aid.

The Dog as an Experimental Animal

The chapter on the dog in The Care and Breeding of Laboratory Animals* was written by Leon F. Whitney of the Whitney Veterinary Clinic. Most readers of this magazine are familiar with the writings of Doctor Whitney, and with the several books he has written on canine disease, nutrition in the dog, the care of pets, genetics, et cetera. In this chapter he has surpassed previous efforts in directions for the management of kennels.

"There are many ways of maintaining dogs, ranging from the single cage to the large outdoor kennel. Every institution has its own individual problems . . . it costs far more for labor in the single-cage indoor kennel, than it does in the outdoor community pen system. The author once took entire care of 200 dogs and puppies, single handed, for a year, kept careful time records of feeding, watering, weighing, grooming, quieting the dogs from barking, cleaning runs, and renewing sand occasionally. All these activities for 200 dogs were handled in five hours a day.

"In the present Whitney Clinic with quarters for 200 dogs, one-half in hospital and the remainder outside, it is possible to compare cost carefully. Aside from medical treatment, two men are required to manage the 100 indoor dogs properly; one easily manages the outdoor facilities and his dogs are the healthier.

". . . One-half of the charges of the outdoor man are in kennels with indoor rooms and outdoor runs. The remainder have individual houses for each run. He feeds, waters, cleans runs, renews sand, powders dogs against external parasites, and in the afternoons has time for repairs, carpentering, etc." It is obvious that the community-pen system would reduce the labor of caring for the outdoor dogs even more.

The discussion of diseases and parasitisms of the dog is handled in the author's usual practical manner. He pays a tribute to distemper prophylaxis as follows: "Carré distemper in some sections is an exceedingly rare disease because of general successful vaccination of dogs against it."

The discussion of "debarking" should possess particular interest for owners of city dogs. He states:

"While not a health measure . . . debarking often seems like one to attendants and those trying to work near a roomful of barking dogs. Debarking is a simple operation which is very effective when properly done. Under general anesthesia the vocal cords are trimmed off, preferably with scissors with serrated edges to cut down on bleeding. After the operation the dog is left with the head lower than the body to allow any hemorrhage to drain out. The dog can have as much fun making the motions of barking without producing an irritating effect. Occasionally the tissue grows back, but it may be trimmed again."

The author, who has bred and raised to maturity more than a thousand dogs, says of the gestation period in the bitch: "Because the average bitch is mated several days before ovulation, the gestation period is generally calculated as being 63 days. It is probably 61 days from ovulation."

*Published by John Wiley & Sons, Inc., New York, N. Y.—Price $8.

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Insurance for Pets

The Animal Insurance Company of America, the first and only organization activities of which will be exclusively devoted to dog life insurance, has been licensed to do business by the New York State Insurance Department, according to general news release.

Capitalized at $1,000,000., of which $300,000. is paid in, the company plans to write insurance policies in the United States and Canada on the lives of "pedigreed" dogs to a limit of $5,000. for each animal.

Inferred is that only purebred registered dogs are insurable under the terms of the contract, however the term "pedigreed" is employed in the release suggesting that only a record of ancestory is necessary for insurability, purebred or not.

Announced rates are $8. per $100. of value of each dog with a minimum premium of $10. Policy term has been set up at 12 months and age limits run from six months to nine years. Animals older than seven will not be eligible except under renewal of existing policies. Group plans are also available.

Coverage includes loss by death from any cause, except poisoning, within the boundaries of the United States and Canada.

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There are now 75 veterinarians in the United States engaged in the specialty practice referred to as laboratory animal medicine for the management of animal colonies in medical schools, agencies, and private research institutions.

Symposium on Zoonoses in the Tropics

In connection with the joint meeting of the American Society of Parasitologists and the American Society of Tropical Medicine and Hygiene, in Philadelphia, Oct. 30 - Nov. 2, 1957, a Symposium will be held on the topic Zoonoses in the Tropics.

Moderated by Dr. Willard H. Wright of the National Institutes of Health, the speakers and their subjects are:

James H. Steele, CDC, Atlanta: Some Zoonoses which constitute Important Health Problems in the Tropics.

D. G. Davey, Imperial Chemical Industries, Ltd., England: Human and Animal Trypanosomiasis in Africa.

Eurelio Malaga-Alba, PASB, Mexico: Tropical Bat Rabies as a Public Health and Veterinary Problem.

Morris Pollard, Univ. of Texas Medical School, Galveston: Tropical Arthropod-borne Viruses—their Importance in Veterinary and Human Medicine.

Interested Veterinarians are cordially invited to attend the Symposium, which will be held at the Benjamin Franklin Hotel, on Thursday, October 31, at 2:00 P.M.

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Dr. Milton M. Leonard, COR '14, of Asheville has been honored by the North Carolina Veterinary Medical Association as Veterinarian of the Year.

Doctor Leonard was selected for this honor by the executive Committee of the North Carolina Veterinary Medical Association as a tribute to his service to the veterinary profession for the past 43 years.

The handsome plaque, denoting the award, was presented Doctor Leonard (r.) by Dr. Robert Williams (l.) of Raleigh, president of the Association, at the annual convention held at the Grove Park Inn at Asheville recently.

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"Go West Young Man"

Two boys on horseback heading West can become a strange sight in this heyday of the machine age, but Mike McGinnis, 15, and his brother Alex, 18, took it all in stride in their 600 mile horseback trek across the plains of the central west. The two sons of Dr. and Mrs. C. L. McGinnis, Peoria, Ill., made the trek from their home to Valley Falls and Barnard, Kans. to visit relatives.

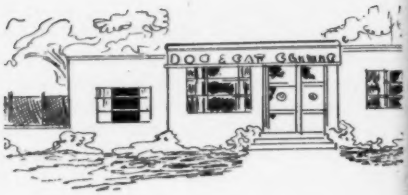
Alex, a sophomore at Dartmouth, and Mike a sophomore at Peoria High School made the trip in approximately three weeks. Their mounts, both 11 years of age, toughened up with each day of travel. The boys covered 25 to 30 miles a day. They camped out at night and sometimes stopped to help farmers with summer chores. Both boys have been riding horses since they were about four years of age.

The horses, a spot named Bill, with Mike aboard, (l.), and a bay called Sally, carrying Alex, took the McGinnis boys from Peoria, Ill. to Valley Falls, Kans. in about three weeks.

CLINIC

CLIFFORD L. McGINNIS, D.V.M.

Peoria, Illinois



A set of home made stocks was placed on the platform at a live clinic that I attended recently. The fellow who had built them had already received a round of applause, because they appeared to be secure. A big Holstein bull that had been given 250 cc. tranquilizer was led into the stocks. As the surgeon inserted a hypodermic needle in the coccygeal region for injection of an epidural solution, the bull sort of flexed its muscles and the stocks disintegrated. So did the crowd. Eight strong men, too close to retreat gracefully and too proud to run, overpowered the patient.

A young veterinarian performed a rumenotomy on a cow about as fast I can spay a virgin bitch. His technic was flawless. I saw the operation about 15 years ago, and it took at least an hour. This operator retrieved a magnet the old cow had swallowed and it was all covered with junk iron.

Individual Technics

About the most difficult operation to do at a live clinic is a cesarean section, because one can never find a patient at the right stage of gestation. In this case, however, an ancient sow was available for the demonstration. The aged patient got too hot from being wrestled around during an earlier demonstration, and expired during surgery. The operator was clever and presented a good suturing idea. He started in the middle of the flank incision and sutured both ways.

Another demonstrator de-clawed a cat using the Resco nail trimmer. The first time I tried this operation some years ago, the nails all promptly grew back. This would not have discouraged me, but the cat was 14 years of age and the owner would not let me try again. He thought the cat and I were both too old.

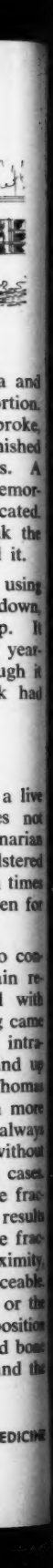
Sometimes, on Bulldogs or Boston Terriers, the conical appendix hanging from the free edge of the soft palate, the uvula, is so long that it acts as a shutter and the dog snores or has difficulty in breathing. A demonstrator first explained then demonstrated his technic for sectioning a portion of the structure. An Allis forceps was run through the loop of a tonsil snare to grasp the uvula and the snare moved up to sever the distal portion. In this case the wire on the tonsil snare broke, but being resourceful the operator finished the section with a pair of curved scissors. A pair of sutures was placed to control hemorrhage; cauterization is sometimes indicated. I owned a tonsil snare once and I think the wire loop broke about every time I used it.

I saw a veterinarian dehorn a steer, using a tree pruning saw. Instead of sawing down, he started at the bottom and sawed up. It only took about three licks on this two year-old steer. The steer stood quietly through it all because a nicely placed nerve block had effected good anesthesia.

The Old and the New

It was extremely interesting to go to a live clinic again, but a bleacher seat does not support the regal posterior of a veterinarian with the same comfort as the upholstered dignity of a television viewing room. In times of great stress one must have an eye open for comfort.

There was a demonstration on how to construct a Thomas splint, and I was again reminded that many fractures will heal with simple traction. About a year ago a dog came in with a shattered femur. I used an intramedullary pin and the dog finally wound up with a short leg. If I had put on a Thomas splint the leg probably would have been more serviceable. Shattered femurs almost always swell considerably. Traction splinting without surgery seemingly serves best in these cases. Have you noticed that over-riding at the fracture sites doesn't appear to affect end results much on the humerus or femur? If the fractured fragments are in reasonable proximity, they heal securely and the leg is serviceable. However, that is not true of the tibia, or the radius. Here the ends must be in apposition or either an unsightly callus or a crooked bone results. The radius bends posteriorly and the tibia always bends medially.



It's to your advantage to use biologicals that exceed standards

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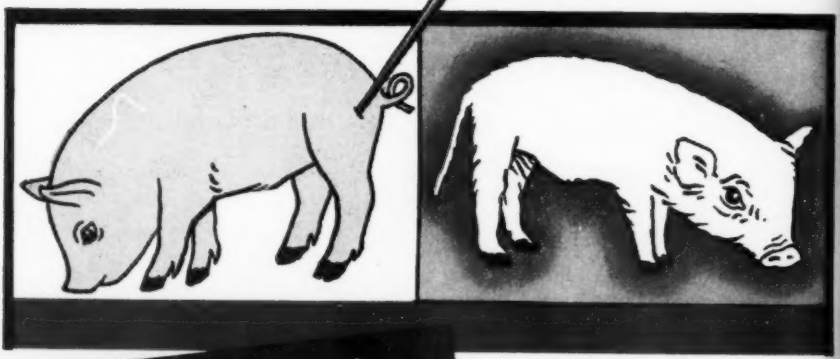

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A. V. M. A. Cleveland Convention

Serious consideration of steps to be taken toward solution of vital problems that face the profession characterized the 94th annual meeting of the A.V.M.A. at Cleveland, Ohio during the week of Aug. 20-25. Most of these problems were discussed at meetings of small interested groups, others in general or sectional meetings.

This work did not, however, interfere or overshadow pressing problems of disease control, or those relating to the maintenance of the general health of both food animals and pets. These matters were keynoted in the address of President Brigadier General Wayne O. Kester, who stated that animal disease outranks all other factors on which success of individual livestock operations are based. Farmers and livestockmen often attribute failure to realize profit on livestock markets or rising feed costs, whereas the challenge of disease ranks foremost among all factors determining whether profits or losses are realized from the various types of livestock operations.

Animal Health

President Kester cited two reasons for present appalling losses suffered by growers, the industry, and the public. These include the failure to use available knowledge, and that being developed currently, and inadequacy of provisions for research efforts directed toward answering problems and developing tools sorely needed by those made responsible for maintenance of animal health. He emphasized that prudence dictates that facilities be provided and investigations pressed in proportion to their needs and that this matter is not one of concern alone for veterinarians but is in reality a public problem. No quick easy way can assure successful preventive measures on which the American livestock producer can depend to reduce the present stunning total of $2,600-000,000. annual toll ($16. per person) extracted by animal disease agents and parasites.

Dr. Leroy E. Burney, Surgeon General, U. S. Public Health Service, Washington, D. C., delivered the feature address at the opening session. He assured those veterinarians within range of his voice that the nation's health services will work with the veterinarians to prevent

President of the A.V.M.A.

Dr. W. W. Armistead

Dr. W. W. Armistead, dean of the College of Veterinary Medicine, Michigan State University, East Lansing, was installed as president at ceremonies during the closing general session of the 94th annual meeting in Cleveland, Ohio. Dean Armistead was elected president-elect by ballot vote in San Antonio, Tex., at the October meeting in 1956.

Born in Columbus, Ohio, in 1916, Dean Armistead attended public schools at both his birthplace and at Houston, Tex. He received his veterinary education at Texas A. & M. College, graduating in 1938, after which he entered private practice as associate of Dr. W. G. Brock of Dallas, Tex. In 1940, he accepted a position as instructor in veterinary medicine and surgery at the Texas school. This assignment was interrupted by service with the Veterinary Corps during WWII. His military service includes assignment with a veterinary general hospital and veterinary evacuation detachment in Italy.

Returning to Texas A. & M. College he was promoted successively to professor in 1947. Leave from teaching assignments allowed him to do graduate work first at Ohio State University where he earned his M.S. degree in 1950. Later he completed the work necessary for a Ph.D. degree at the University of Minnesota. He was promoted to dean

and head of the School of Veterinary Medicine at Texas A. & M. College in 1953.

As reported in VETERINARY MEDICINE (Sept. 1957 — page 462) Dean Armistead resigned from his position at Texas to accept the deanship of the Michigan school to succeed the late Dr. Chester F. Clark as of Sept. 1, 1957.

Active participation in organized veterinary medicine for the betterment of the professional status of practitioners has characterized the phenomenal career of Dean Armistead. His assignments for the coming year, considering requirements of his new position, are likely to tax the enthusiastic approach our new president is known to apply to problems. His ability to get things done and his firm leadership are counted on to accomplish the job outlined for the coming year.

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disease, and in health research and training. The community looks to the veterinarians for special skills in the protection of human as well as animal life, he said. He also spoke of the important role veterinarians are likely to play with respect to the recently much discussed Asian influenza. In this is expression by a distinguished member of an allied profession holding high government office that differs considerably from the pronouncement a few months ago concerning value of veterinarians in the Armed Forces.

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Long overdue was the recommendation of the A.V.M.A. National Formulary Committee that there be set up within the framework of the national association an organization similar to the Council of Pharmacy and Chemistry of the American Medical Association.

The duties of this group would be to effect liasion and cooperation with governmental agencies such as the Food and Drug Administration for removing undesirable products from the market, restricting sale of others, and establishing standards for in-feed additives and therapeutic agents for protection of the industry and the public health.

Repeated warnings were sounded at Cleveland aimed at uncontrolled and indiscriminate use of in-feed chemicals, dangerous sprays and dips, administration of various drugs from growth promoters to tranquilizers to food animals, and the application of chemical preservations during meat processing.

Further long range study of practices popularized during recent years was urged as a public health safeguard. This combined with strict inspection measures and microchemical analysis by trained personnel was advised by regulatory officials of the Animal Research Service.

President-Elect of the A.V.M.A.

Dr. Russell E. Rebrassier

Dr. R. E. Rebrassier, OSV '14, Professor of Veterinary parasitology, College of Veterinary Medicine, Ohio State University, Columbus, Ohio, was the successful candidate on ballot vote for president-elect and was so installed during ceremonies at the closing session of the convention.

Born in Louisville, Ohio, Doctor Rebrassier received his D.V.M. degree from Ohio State University in 1914, and M.S. from the same institution in 1925. Two years following his graduation he returned to his Alma Mater to accept a position as instructor in veterinary parasitology. He now serves as assistant dean and secretary to the College of Veterinary Medicine.

Doctor Rebrassier has lent his talents generously to organized veterinary medicine during his career of over 40 years at Ohio State. He served as president of the Ohio State Veterinary Medical Association in 1949 and as its secretary from 1929 to 1946 and from 1954 to date. He is currently secretary of the A.V.M.A. Council on Education and a delegate to the House of Representatives. His civic duties include service as president of the Columbus Board of Health.

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Approximately 35 group conferences and meetings were scheduled either preconventional or during the late afternoon or evenings of the week of sessions. The work accomplished in these compliments A.V.M.A. services to the membership. In this is evidence of the scope of veterinary medicine and the importance of the profession in the modern world.

AWARDS FOR 1957

A feature of each annual session of the national convention is the presentation of a group of awards which have been established at national headquarters to recognize a few who by their enthusiastic devotion to the challenge of their field have rendered meritorous service.

Certainly not all are recognized who deserve honors, but recipients are selected for distinguished service awards in as far as possible under a system established by official action of the Executive Board.

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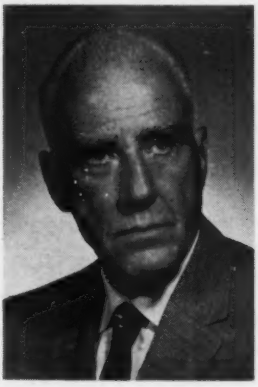
Borden Award

The Borden Award, medal and certificate, with a cash honorarium of $1,000., has been extended each year by the Borden Company Foundation to recognize and encourage outstanding research achievements in the control of diseases, particularly of dairy cattle.



Dr. Samuel H. McNutt

Dr. Samuel H. McNutt, ISC '17, Department of Veterinary Science, University of Wisconsin, was named winner and recipient of the coveted award. He was cited for his work and contributions in the fields of reproductive and nervous disorders of cattle.

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A.V.M.A. Award

The A.V.M.A. Award, established by the Association in 1931, has since that time bestowed the honor on only eight other veterinarians. It is awarded only when it is felt that a member of the profession is deserving of unusual recognition for his services to veterinary medicine.

Dr. O. H. Person, KCV '13, Wahoo, Nebr., was honored by a grateful profession for his

Dr. O. H. Person

meritorous work as a Nebraska state senator for an extended period during which he worked for and was instrumental in achieving effective animal health legislation. He also served as mayor of his home town, president of the Nebraska Veterinary Medical Association, and the Nebraska League of Municipalities. He received an award of distinction recently from his state association.

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XII International Veterinary Congress Award

This award, established in 1936, resulted in Finance Committee action following the XII International Veterinary Congress held in New York City in August 1934. Some $10,000.

Dr. Edward Records

remained as excess of cash receipts over expenditures, $5,000. of which was deposited as an endowment placed in custody of the treasurer of the A.V.M.A. Annual income from this fund was projected as an award for the most noteworthy contribution to the advancement of veterinary science during the preceding year. A special committee is assigned the task of selection of recipient.

Dr. Edward Records, UP '09, Reno, Nevada was awarded the XII International Congress Award for 1957 in recognition of "outstanding service to veterinary science." He was cited for his work covering 38 years of research, teaching, and leadership in disease control efforts in Nevada. Doctor Records retired from his position of Chairman of the Department of Veterinary Science at the University of Nevada in 1956. His research covered a number of important diseases of livestock including brucellosis, scabies, dourine, and tuberculosis. He is perhaps best known for his work with equine encephalomyelitis. He is author or coauthor of at least 31 articles in the field of veterinary medicine.

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Certificates of Appreciation

Certificates of Appreciation were presented to Dr. E. A. Cahill Sr., former president of Allied Laboratories, Inc., and Mr. Walter Lawrence, of Radio Corporation of America.

These awards are unique in that they represent dual citations in recognition of significant contributions of a team by whose joint interests, financial support, and technical know-how have made possible the most important development in the scientific programs of the A.V.M.A. and other conventions. Closed circuit television programs have been a feature of A.V.M.A. meetings since that held in Milwaukee in 1951. Both men and the organizations they represent, deserve credit and appreciation for this development which has contributed so much and has been shared by many persons.

Dr. E. A. Cahill Sr. is well known to the veterinary profession as a stalwart supporter and defender of ethical practices and products. His work in directing a vital industry effort for the benefit of the American livestock industry through the veterinary profession has contributed to the national health and wealth.

Mr. Walter Lawrence has applied his talents, understanding, technical ability, and acute sense of values in a manner that makes them largely responsible for success of television presentation. He was referred to during the presentation as the "genius behind the TV camera rather than in front of it."

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Major symptoms of pantothenic acid deficiency in calves are noted to include rough haircoat, "spectacle" eye, dermatitis under the lower jaw, excessive nasal mucus, loss of appetite, reduced growth rate, and eventual loss of weight, ending in death. Postmortem lesions include pneumonic changes, demyelination of the sciatic nerve and spinal cord, extensive edema in the fascial plane of muscle tissue, and softening and congestion of the cerebrum. *Jour. Nutrition,* 61:195 (Feb. 10), 1957.

Mr. Walter Lawrence, Radio Corporation of America (l.) President Brig. Gen. Wayne O. Kester (c.), and Mr. E. A. Cahill, Jr., (r.), who received the award on behalf of his father Dr. E. A. Cahill, Sr.

Humane Act Award

A youngster from Mountain Grove, Mo., Myra Allena Lockhart, was named winner of the 1957 National Humane Act Award including a $100. U. S. Saving Bond and the official national citation for humane work.

Myra Allena Lockhart and the deer Laddy restored to health by good nursing care.

In this instance the Committee took recognition of little Miss Lockhart's devotion to the care of a wild deer injured by a car near her home. Her excellent nursing care was rewarding, as is evidenced by the photograph, and the deer is now used in special wildlife studies at the University of Missouri.

Special recognition for other outstanding acts of kindness toward animals was also presented during ceremonies.

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The USDA report on the national status of garbage feeding as of April 30, 1957 indicates that 92.2% of premises feeding 92.5% of garbage-fed swine are heat processing garbage prior to feeding. Swine being fed raw garbage constitute 7.5% of the total. Monthly inspections are reported from 41 states.

Practitioner Research Award

Dr. William G. Magrane, MSU '40, Mishawaka, Ind., was presented the Practitioner's Research Award, the latest of the official awards of the national Association. Dr. Robert B. Getty, chairman, A.V.M.A. Research Council made the presentation citing the advanced work of Doctor Magrane in canine ophthalmology.

Dr. W. G. Magrane

In 1953, Doctor Magrane took leave of his extensive practice to complete graduate training in ophthalmology at the Graduate School of Medicine, University of Pennsylvania under an A.V.M.A. Research Fellowship. He returned to practice in Mishawaka where he is in partnership with his brother, Dr. H. J. Magrane, in an exclusive small animal practice. Study in ophthalmological problems in small animals continues to consume much of Doctor Magrane's time, including the challenging anomaly of glucoma in dogs. The award was based on manuscript material submitted for publication in professional journals over the last four years.

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In view of the continuing practice of increased storage of grains under government subsidy, it becomes increasingly important to know the effects of storage upon the nutritional components of the various grains involved. In the event of deterioration in the over-all nutritive value as a result of storage, regardless of conditions, it then becomes necessary to provide adequate supplementation of these grains when fed to assure satisfactory results.

POULTRY PRACTICE PROBLEMS

W. R. HINSHAW, D.V.M., Ph.D.
Frederick, Maryland

Blood and Meat Spots in Eggs

Economically, blood and meat spots in eggs represent a source of considerable loss to the poultry industry. Two reasons for such losses are (1) the direct one due to culling of eggs at the processing plant, and (2) the equally important aesthetic one of reduced consumer demand because blood and meat spot eggs observed in the kitchen, and/or on the table.

Blood spots in eggs are defined by Jeffrey (*Featheredfax*, Univ. Mass., 31 July 1957) as spots of bright red blood usually found flattened out on the yolk surface. When the blood spot becomes large it may diffuse into the albumen to produce a "bloody white." The cause is a hemorrhage in the follicle prior to ovulation. It is generally recognized that the tendency for blood spotting is primarily a factor of heredity (Lerner, I. M., Taylor, L. W., and Lowry, D. C., *Poultry Sci.* 30:748, 1951). Season, diet, and disease may be contributing factors.

Meat spots, much less important economically, may be the result of degenerated blood spots, or debris material that has collected in the oviduct and picked up during ovulation. According to Jeffrey, the latter is the more common source. The degeneration blood spot type is usually found entwined in the chalazae. The meat spots which result from debris show a high correlation between shell color and meat spot color. For example, white eggs have white meat spots, and in dark eggs they are dark brown in color. In duck eggs greenish meat spots are common. Debris types are most often found in thick albumen and chalazae.

Dawson and Richardson (*Quarterly Bul.*, Mich. State Agr. Exp. Stat., 35 (1): 110, Aug. 52) estimated that 2 to 4% of all eggs contain blood or meat spots. They report one example where 1.5% of all eggs candled at a Michigan egg buying station in 1950 were classified as "loss" mostly due to detectable blood and meat spots. On this basis, it was estimated that Michigan poultrymen received $770,000. less for their eggs than they would have if all eggs had been free of detectable spots.

As stated previously, heredity plays an important role in the tendency of hens to lay eggs with blood spots but other factors are also important. One of these is time in the laying year of the flock, since incidence of blood spots tends to increase as the laying year progresses. Nalbandov and Card (*Poultry Sci.* 23:170, 1944) found that when hens are turned on range, incidence of blood spots diminished but they found no nutritional causes for this change. Jeffrey and Pino (*Poultry Sci.* 22:230, 1943) in studies on genetic and environmental factors, found that fright by dogs did not increase incidence. There is no good evidence that vitamins C and K have any affect on incidence.

Location of all types of spots were studied by Dawson and Richardson in 2,438 New Hampshire eggs from a single flock. In these eggs, 40% of the spots were on the yolk; 20.4% in the chalazae; and 21.9% in the albumen. The remaining eggs had spots in more than one position. Fifty percent of the spots on the yolks were red and only 5% were white. The others were graduations from light brown to reddish brown. In contrast, 50% of the spots in the albumen were white and only 2% were red. In the chalazae, 46.2% were brownish red or red and 22.3% white.

At the 1957 meeting of Poultry Science Association, Baker and Stadelmen of Purdue University (Abstracts of 46th Ann. Meet. Poultry Sci. Assn. 6-9 Aug. 1957 p. 3) stated that many housewives consider that large chalazae are a hindrance to cooking. They believe that national egg consumption has suffered because of the presence of large chalazae cords. Their research indicates that the size of the chalazae is a hereditary factor which can be reduced by selective breeding. Their studies showed no correlation between size of chalazae and internal egg quality.

Time of candling apparently influences the number of eggs culled at the processing plant because of detectable blood and meat spots. Jensen and Stadelman (*Poultry Sci.* 30:919, 1951) found that spots in eggs could be detected more readily in eggs several days old than in newly laid eggs. The maximum percentage of spots were detected in ten-day-old eggs. Temperature at which the eggs were

held also affects the candler's ability to detect blood spots. The same investigators found that small blood spots begin to disappear shortly after eggs are laid. They recommended that eggs should be at least three days old before being candled if optimum detection is desired.

In summary, blood spots or meat spots resulting from blood spots constitute 95% of the "spot" problem according to Dawson and Richardson. Prevention is recognized as primarily a genetic problem since the tendency to production of "blood spot eggs" may be inherited. Contributing causes must be also considered. Management of flocks may be important. Jeffrey, (*Featheredfax*, 31, July 57) stated that confinement in cages reduces significantly the incidence. More cooperation between the nutritionist, the veterinarian, and the geneticist would appear desirable in determining the relationship of nutrition, disease, and hereditary tendencies to incidence of blood spots in eggs. When serious blood spot problems occur locally, the veterinarian can be of service in cooperating with specialists in other fields in efforts to determine the cause and to find a solution.

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A New USDA, AMS Poultry Grading Manual

Poultry Grading Manual, USDA, Agricultural Marketing Service (AMS) Agriculture Handbook no. 31 (May 1956) is a manual prepared to aid in obtaining uniform application of United States Classes, Standards, and Grades of Poultry. It is a complete but concise guide on this subject, and contains a list of 22 selected references for additional study. Poultry covered are chickens, turkeys, ducks, geese, guineas, and pigeons. Subjects discussed include anatomy and physiology, grading of live poultry, grading of dressed and ready-to-cook poultry, bases for grading and inspection services, regulations governing grading and inspections, programs offered by USDA, AMS, legislation affecting grading and marketing of poultry and planning the grading school. The manual is for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. for 30 cents.

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Ohio State University Professor Cahill predicted that 90% of the meat sold at retail by 1967 will be frozen.

Convention Notes

The A.V.M.A. Committee on Brucellosis advised that approximately 40% of calves within eligible age limits for official vaccination were now receiving strain 19 Brucella vaccine. It was also recommended that this phase of the brucellosis eradication program be emphasized since calfhood vaccination has come to be considered most significant in the program.

The Committee also suggested that requirements for recertification include a provision that all calves in the area to be recertified be officially vaccinated.

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Value of public health veterinarians in the newly-developed field is being demonstrated dramatically by well-qualified representatives of the specialty service. Their services are now being utilized effectively not only in the now standardized area of food hygiene and communicable disease control but also in chronic disease research, including cancer and heart disease, occupational health including air pollution, radiological health, and public health administration.

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In its report the Committe on Animal Reproduction and Artificial Insemination brought out the disease transmission potential of artificial insemination particularly of cattle. The practice, should it continue to flourish unadvised and uncontrolled in the hands of those technically unsophisticated in matters of animal diseases, represents an important new method of animal contact and disease dissemination.

Advantages of the practice are many and varied so that the practice may be expected to flourish and grow. Veterinarians failed to interest themselves in the practice when it was first proposed almost 20 years ago. Now, it is so common that over 1,000,000 inseminations were made in Wisconsin alone last year. A total of 5,762,656 inseminations were made by 75 organizations, some of whom have developed proportions undreamed of only a few years ago.

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Findings of the Committee on Public Health revealed that cases of human brucellosis in the United States dropped from 1,444 in 1955 to 1,100 in 1956. In this is tangible evidence of the public health importance of the campaign to eradicate bovine brucellosis.

PRINCIPLES OF ANIMAL HEALTH

R. R. DYKSTRA, D.V.M.

Manhattan, Kansas

Brucellosis Eradication Progress

Picture Story no. 105 from the Office of Information, U. S. Department of Agriculture, in regard to headway against bovine brucellosis reports that when the all-out eradication program sponsored by the USDA and the states was started in 1935, 11.5% of cattle reacted to the blood agglutination test. A steady decline in evidence followed annually except for the war period to 2.6% in 1954. Since the accelerated program begun in 1954, incidence has been further reduced to less than 2%. Much of the credit is due the efficacy of the brucellosis ring test (ABR) as a herd diagnostic method. Used as a screening test, ABR positive herds were blood tested by individual blood agglutination testing of all members. The report indicates that Maine, New Hampshire, North Carolina, Washington, Wisconsin, and Delaware are modified certified brucellosis-free areas, and in addition as of May 1, 1957, 441 counties in 26 other states have reached this status. It is estimated that brucellosis, in addition to being a human disease hazard, entails losses of $50,000,000 annually.

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Forster in *The Veterinary Record* for May 18, 1957, reports on A Clinical Trial of a New Treatment for Bovine Ringworm.

After indicating the frequently unsatisfactory results following the usual treatment with iodine, mercury, and other compounds because of apparent inability to penetrate the stratum corneum of affected hair follicle he discusses the value of a 0.25% alcoholic solution of "hexadecamethylene-1:16-bis (isoquinolinium chloride) colored with crystal violet." The agent is applied after removal of scabs and crusts by "scraping or scrubbing with water and drying the parts." The use of soaps or detergents are contraindicated. The remedy is applied with a stiff brush (cotton swabs near eyes) for from one to three applications at three or four days intervals. Over 100 cases were treated clinically with the result that "rapid and effective cures in the cases treated" were produced.

Narcotic Antagonist

A comparatively new drug, reported in 1954, is known commercially as nalline, nalorphine hydrochloride U.S.P. — n-allylnormorphine hydrochloride. It is a morphine antagonist so that, for example, human morphine addicts when under the influence of the narcotic exhibit abstinence symptoms following an injection of nalline. Pet animal practitioners are said to be receiving the new drug with considerable favor because of its non-narcotic effect, and because it promptly arouses dogs affected with prolonged morphine narcosis. The usual dose for a dog is 1 mg. for each 5 lb. of body weight.

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Lice Infestation Sometimes Confused

Irritation resulting from these lice infestation consumes energy and thus reduces milk flow and meat production. A diagnosis of this condition should not be made hastily or carelessly as the infestation bears some superficial resemblance to such maladies as hyperkeratosis, mange, ring-worm, light sensitization, et cetera. In season and/or under proper housing conditions, long-haired animals should be clipped, or at least a strip of hair the length of and along the region of the back should be so treated. The removed hair to be burned. As a spray for all types of cattle a solution of lindane is recommended. It is prepared by adding 2 lb. of a 25% lindane powder to 100 gal. of water. Two to three gallons are required to thoroughly saturate the hide of a mature animal. All parts of the body must be treated, and treatment should be repeated in ten days or two weeks. Wettable chlordan employed in the same manner and strength as the lindane solution also is effective treatment but must not be used on lactaing cows or calves. During cold weather, when wetting the coats of animal by sprays or dips is countraindicated derris powder containing not less than 1.5% of its active ingredient rotenone is recommended to be applied as a powder.

VETERINARY NUTRITION

MORRIS ERDHEIM, D.V.M.
Chicago, Illinois

Veterinary-Feed Man Cooperation

Constructive plans were formulated by two different groups recently, marking progress in veterinarian-feed man relationship. The Nutrition Committee of the state veterinary association met with the directors of the state feed association in Illinois. A similar meeting was held in Nebraska.

Activity of this nature has been concentrated at high organizational levels for some time. The American Feed Manufacturers Association has had a representative of the A.V.M.A. on its Nutrition Council for about seven years. The current representative, Dr. William Pounden of Ohio, is doing an excellent job. He represents the A.V.M.A. well, and the association members can be proud to have him in that spot.

Moreover, the American Association of Veterinary Nutritionists is participating in a joint undertaking with the A.F.M.A.'s Nutrition Council. The former's Public Relations Committee has been meeting with the latter's Veterinary Relations Committee twice a year for two years. In addition to the good-will these meetings developed, specific projects have been set up. One important activity is the compilation of a list of feed additives for the practitioner's information. (See VETERINARY MEDICINE, 51:451 [Oct.], 1956.)

Important as these high-level activities may be, they are remote to the practitioner who is concerned primarily with activities in his own state. For this reason these localized meetings in Illinois and Nebraska are significant. Although each state presents a different set of problems, these meetings can help point out what can be done, if the interest is present.

Nebraska

The Nebraska Veterinary Medical Association designated a Committee of three — Drs. Aiken, Cady and Lundberg — to meet with a group of feed manufacturers representing the feed group. The meeting was successful. Both groups agreed to report back to their parent organizations suggesting that a permanent "joint committee" be established. This joint committee would discuss and work on problems of mutual interest.

Another meeting was scheduled for September 5 at which time specific programs will be developed. These would be presented to the respective parent organizations—at the Nebraska Formula Feed Conference in October and the Nebraska Veterinary Association Conference in December—for further consideration.

Illinois

Contact between the veterinary and feed groups was made last year. The president of the state feed association was invited to the banquet at the annual veterinary convention. The Nutrition Committee of the veterinary association was represented at the feed association's board meetings. The meeting between the feed group's directors and the veterinary association's Nutrition Committee was set up to establish machinery to do something constructive.

Two specific activities are now "in the works." Both had been discussed informally some time before and were approved by Doctor Gambrel, president of the Illinois State Veterinary Medical Association.

1. The veterinary association accepted the feed association's invitation to contribute a "page" in *Feed Folks*, the Illinois Feed Association's monthly organ. The various committees of the veterinary association would be asked to supply the copy. The material would be of general interest and aimed at the feed man in the field.

2. The feed association agreed to help the veterinary association organize a nutrition conference for veterinarians. A number of years ago, a similar conference was very well received by the practitioners. This prompted Doctor Gambrel to work for its reestablishment.

The Nutrition Conference for Veterinarians is scheduled to be held in Peoria, Ill., on November 6. A committee is now working on the details. Attendance will be limited to veterinarians, and the program will be oriented

(Continued on page 514)

VETERINARY PARASITOLOGY

A. O. FOSTER, B.A., M.A., Sc.D.

Beltsville, Maryland

Beef Measles

A report from Kenya on cysticercosis bears the caption "Beef Industry at Bay."[3] Mention is made of the "tragic truth" that most of the country has no meat-inspection service. Experience at three "designated abattoirs" under veterinary supervision, however, seems to have indicated that cysticercosis is threatening to kill Kenya's infant beef industry. At one abattoir 38% of livestock producers were sending measly beef to slaughter in 1953 and the percentage increased to 87 in 1956. The comparative figure for Britain in 1953 is given as 3%; data of this nature are not generally obtainable for most areas. In the United States, the percentage of carcasses "retained" on account of *Cysticercus bovis* under federal and other competent inspection is fortunately less than 0.1%, although infestation of some feeder herds has occasionally run as high as 43% during recent outbreaks. The over-all retention of approximately 15,000 carcasses annually is a large number; yet the important fact is the ubiquity of the hazard and the magnitude of the problem in terms of cattle production and human infection that can result from the promiscuous defecation habits of a few infected laborers or the contamination of grazing pastures with untreated human sewage.

Kenya's problem is singularly grave, both for the cattle industry and human populations, but there is evidence that cysticercosis throughout the Temporate Zone is far from a diminishing problem. In Kenya there are some superstitions that militate against control — a belief among some natives, for instance, that the tapeworm *(Taenia saginata)* increases fertility of women and virility in men — but part of the general problem may be caused by an increased movement of infected persons throughout the world.

The treatment of infected farm personnel, promotion of sanitary habits, insistence on more thorough cooking of beef, and other measures directed toward the human carrier are the best means of improving control. There may be some prospect, however, of combating the cyst stage in the bovine host, if we are to take an optimistic view of the progress with socalled systemics against other tissue parasites.

Despite emphasis on the importance of the adult beef tapeworm as a human parasite, the principal economic problem is the larval stage in cattle. A recent comment on this from England[4] stresses particularly the chance detection of cysticercosis by meat-inspection procedures. The number of cases found depends, in considerable degree, on the number of inspection incisions and the thoroughness of the examination.

▼ ▼ ▼

The New Repellent — Diethyltoluamide

For more than two years, information has been developing on an insect repellent that has increasingly aroused the interest of veterinarians. Unfortunately, the material in question, technical N,N-diethyltoluamide containing 70 to 72% of the meta isomer, appears still to have no proved uses or recommendations for pets and livestock despite its apparently long-lasting, safe, superior repellency against mosquitoes, chiggers, ticks, flies, and fleas.

Diethyltoluamide is a product of the efficient, well-known Orlando laboratory of the Entomology Research Division, USDA, and full information about it may be obtained from the Division office at Beltsville, Md. Enterprising individuals, moreover, may now find a commercial preparation of this chemical available to them for personal and experimental use. Obviously, there is the prospect and hope that this best-of-all repellents will shortly prove useful in the veterinary field.

▼ ▼ ▼

A hoary bat, *Lasiurus cinereus,* which attacked and bit an eight-year-old boy in Oklahoma was proved rabid by mouse inoculation, although microscopy of brain tissue failed to reveal Negri bodies.

[3]Ginsberg, A., *Cysticercus bovis* — The Story of "Measles," Veterinary Department, Kenya, 1 p. (1957?).

[4]Anon., Bovine Cysticercosis. *Vet. Rec.,* 69:66, 1957.

THE PRACTITIONER'S LABORATORY

WILLIAM L. SIPPEL, B.S., V.M.D., M.S., Ph.D.
Kissimmee, Florida

Cross-Matching Blood for Transfusion

Blood transfusion reactions are rare in most domestic animals. However, the more frequent utilization of blood transfusions with possible sensitization of the recipient to the blood type of the donor is increasing the likelihood of reactions.

The primary danger in transfusions is that the erythrocytes of the donor will be agglutinated by the serum of the recipient. These aggregates will act as emboli and block the capillaries in the lungs or possibly pass through the capillary bed of the lungs and block vessels in the brain, heart, or other organs. These agglutinated cells will subsequently hemolyze and can produce hemoglobinemia or hemoglobinuria. Smith and Jones[1] in their excellent new veterinary pathology book, indicate that a grave sequella of hemoglobinemia may be occlusion of tubules of the kidney with uremia possibly resulting. In addition, the symptoms of shock, nausea, vomiting, circulatory collapse, and cyanosis may develop.[2]

Considering these possibilities the routine cross-matching of bloods prior to transfusion is a prudent procedure.

Technic

Materials. Two clean dry test tubes (Bang's tubes).

Two Bang's tubes containing anticoagulant* and marked D (donor) and R (recipient).

Physiological saline solution.

Four clean 10 ml. glass syringes and suitable bleeding needles.

A glass plate for conducting test.

Procedure

1. Place 3 ml. (measure with one of the syringes) of physiological saline solution (8.7 gm. NaCl in 1 liter of water) in each of two test tubes.

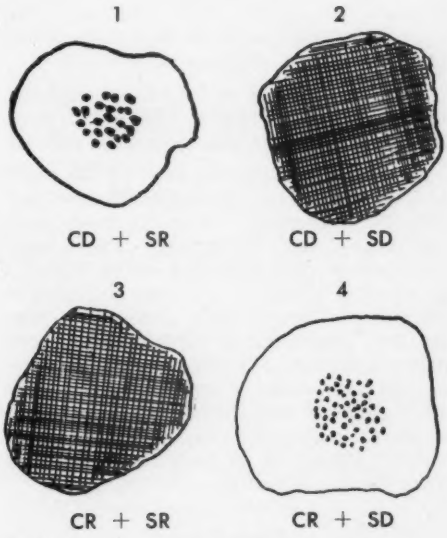

Diagram of cross match of incompatible bloods; no. 1 and 4 cells are agglutinated, 2 and 3 homogeneous suspensions.

2. Draw 10 ml. of blood from the donor with one syringe and a like amount from the recipient with another.

3. Add six drop (0.3 ml.) of blood from the donor to one of the saline containing tubes (label D) and a like amount from the recipient to the other (label R).

4. Remove needles from syringes and gently discharge blood down side of appropriately labeled (D or R) tubes of anticoagulant. Invert gently to dissolve anticoagulant.

5. Centrifuge or allow cells to settle.

6. Place two drops of oxalated plasma (step 5) from donor on each of two squares of a glass plate (Bang's test plate) or microscope slides and repeat with recipient's plasma in other locations.

7. Using a clean syringe, two drops of the cell suspension of the recipient is added to two

*Ammonium oxalate 6 gm.
Potassium oxalate 4 gm.
Water q.s. 100 ml.
Add 0.15 ml. to Bang's tubes with a tuberculin syringe, dry to crystals and keep on hand for use. This amount will prevent coagulation of 5 ml. (half Bang's tube) if blood is gently inverted in tube to dissolve crystals.

drops of the oxalated plasma from the donor and to one of the drops of plasma from the recipient. Repeat using a clean syringe with two drops of the cells of the donor added to the remaining drops of plasma from the donor and recipient.

8. Rotate gently and observe grossly or microscopically for clumping. According to Young[3] *et al.* dog blood should be read at two minutes. Coffin[4] recommends 5 to 8 minutes agitation without reference to species.

Incompatability is indicated by clumping, agglutination, or hemolysis of the erythrocytes. If these occur a new donor should be selected.

If microscope slides are used for the above test, cover slips can be added and the tests read with the microscope. A modification using test tubes 7 mm. in diameter can be used. One drop of cells, saline and oxalated plasma or serum is placed in each tube according to the cross-matching outlined above. The tubes are then centrifuged at 2000 r.p.m. for one minute and read. If tapping the tube produces an even resuspension of erythrocytes the bloods are considered compatible. If clumping or hemolysis is observed a new donor should be sought. Hemolysis is more easily detected when the test is conducted in tubes.

Precautions

The above technics are not as precise as blood grouping technics employing high potency antisera for specific blood groups as used in human typing or as outlined by Young *et al.*[3] for canine group A. However, as the response of most animals to the antigens of a previous transfusion or pregnancy is not usually of a high order (some dogs and horses excepted) the cross matching technic will probably detect cases where trouble would be experienced.

Rouleaux formation, or stacking of the cells like a roll of coins, may cause confusion. This can be broken up by tapping the plate or slide.

REFERENCES

1. Smith, H. A. and Jones, T. C. Veterinary Pathology. Lea and Febiger, Philadelphia, 1957.

2. Wintrobe, M. A. Clinical Hematology. Lea and Febiger, Philadelphia, 1951.

3. Young, L. E., O'Brien, W. A., Swisher, S. N., Miller, G., and Yuile, C. L., Blood Groups in Dogs — Their Significance to the Veterinarian. *Am. Jour. Vet. Res.*, 13:207, 1952.

4. Coffin, D. L., Manual of Veterinary Clinical Pathology. Comstock Publishing Co., Ithaca, N. Y., 1945.

Veterinary Nutrition

(Continued from page 511)

accordingly. Further details will be published when they are available.

Need for Interest

That such cooperation can lead to advantageous results for members of both groups and the livestock producer they both serve has already been noted by many people in a variety of ways. It is not redundant to point out, however, that for such joint programs to be successful there must be continuing interest in all activities.

It was pointed out above that the Nutrition Conference for Veterinarians was well received by those who attended. Why didn't it go on year after year? The "guiding light," Lyman Peck, died, and nobody else provided the drive and interest.

In Nebraska a similar story can be told. The Nutrition Conference held each fall at the University provided for a "Veterinary Day." This was well received the two years it was held. However, it was permitted to run on its own momentum. As a result, during last year nothing happened. There was no "interested party" to see to the details. With this new activity in Nebraska by a joint committee representing both groups, perhaps the conference can be revived.

In any case, there is much to be gained by mutual cooperation. It can be effective at the state level. What's happening in Nebraska and Illinois can be duplicated elsewhere. But someone must provide the spark and drive necessary to keep activity alive.

▼ ▼ ▼

Arthropod-Borne Encephalitis Film Released

The Audiovisual Section of the Communicable Disease Center U.S. Public Health Service, announces release and availability of a new 16 mm. (color-sound) film entitled, An Introduction to Arthropod-Borne Encephalitis.

The film establishes the nature, significance, distribution extent, and known control measures for arthropod-borne encephalitis. Illustrated are cases in man and horses, distribution of three known types, and control means.

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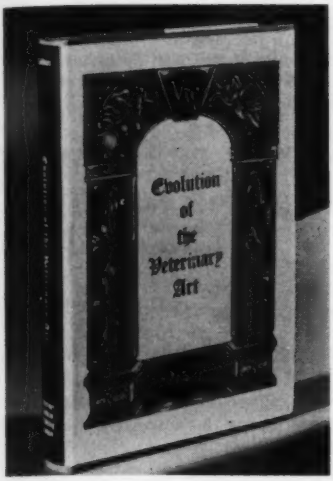

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*Quin, A. H., Our Professional Heritage, *Vet. Med.*, 50:519, 1955.

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In the 20 years, more or less, between the birth of rodeo and the turn of the century, Quarter Horse racing commanded attention all the way from Texas to the high plateaus of Montana, with the arid lands of New Mexico and Arizona thrown in for good measure. The cattle industry reached its midway prosperity by 1880. Out of it grew the sport of the West, startling as it was nerve-testing, dangerous as it was thrilling. The cowboy tournament, with bronc busting and steer roping, was almost always accompanied by the cowboy race as a main attraction.

Then, as now, the voice of protest could always be heard. In Phoenix, for instance, Washington Street was often roped off for cowboy exhibitions in the middle 1880's. It made a fine straightaway race track, and the citizenry backed its opinions on horseflesh with anything from money to beef on the hoof, with the winnings often being trail-herded home. But the loser looking about for sympathy, and seeing none, could be counted on to react in a number of ways.

Representative J. D. Rumberg of Maricopa County, Arizona found no sympathy the afternoon he dropped a pile of coin on a glue factory candidate. So he reared back and saw the light; to wit, it was his duty to banish horse racing from the great state of Arizona. Accordingly, he introduced a bill to that effect in legislature. Not a few of the lawmakers flinched as though struck by a sniper.

The measure was accorded lengthy debate. The peculiar anomalies of horse racing were examined in great detail. All in all, cloakroom timekeepers noted that debate lasted through the consumption of several bottles of whiskey. Legislators were frankly in a quandary. Some-

how, it was felt, just defeating the measure was not enough.

Just before a vote was taken, one of the lawmakers jumped to his feet, the perfect example of mind over circumstance. The solution he offered was immediately recognized as the *tour de force*. He asked to have his county exempted from the provisions of the bill. This amendment was passed.

One after another, all counties asked and were exempted from the provisions of the measure. At this point John Alsop, Rumberg's fellow member from Maricopa County, demanded and got recognition from the chair.

It was one hell of a speech. If anything, it was a feat of mass hypnotism, with the rolling phrases falling in cadenced delivery from his ball-bearing lips. He hated sin. He hated horse racing. He hated it especially when you had your cash on the wrong nag. And it was the duty of the legislature to protect the morals of the people. But, alas and alack, reform must flow up from the will of the people, not down from the will of the legislature. And not all of Maricopa County was ready for such a drastic change at this time.

But the areas of the state that demanded reform were entitled to reform. John Alsop then asked that all of Maricopa County be exempted from the provisions of the bill banning horse racing, except a quarter section of land close to Phoenix. He described the metes and bounds of this quarter section with great care, until Rumberg cut him off.

"Damn it, Alsop," he shouted. "You're describing my ranch."

"Precisely,' agreed Alsop. And the bill was thus passed by the representatives, with horse racing outlawed in the portion of Arizona known as Rumberg's ranch.—*Charles Walters Jr.*

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Rabies in bats has been reported for 15 states since the first reported case in Florida in 1953. Four species of tree-living or solitary bats and nine species of colonial or cave dwelling bats have thus far been implicated as possible vectors of the disease.

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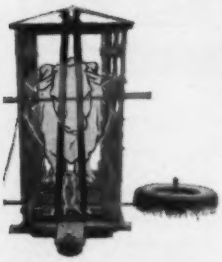

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dustry; Mr. C. F. Stilwell, Sioux City, attorney; and Mr. E. A. Cahill, Jr., Kansas City, Mo., who for the past several years has served as special representative of the executive offices of Allied Laboratories, Inc., of Kansas City.

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(Continued on page XXXVII)

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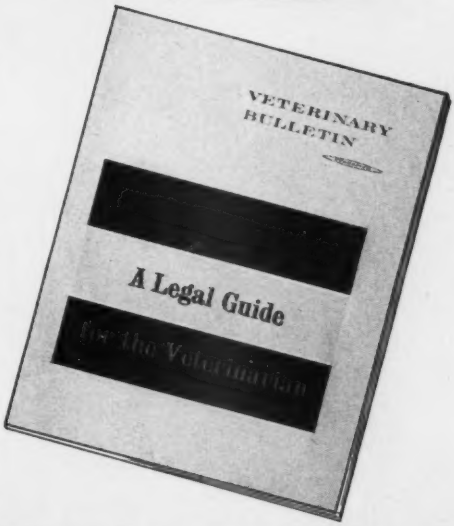

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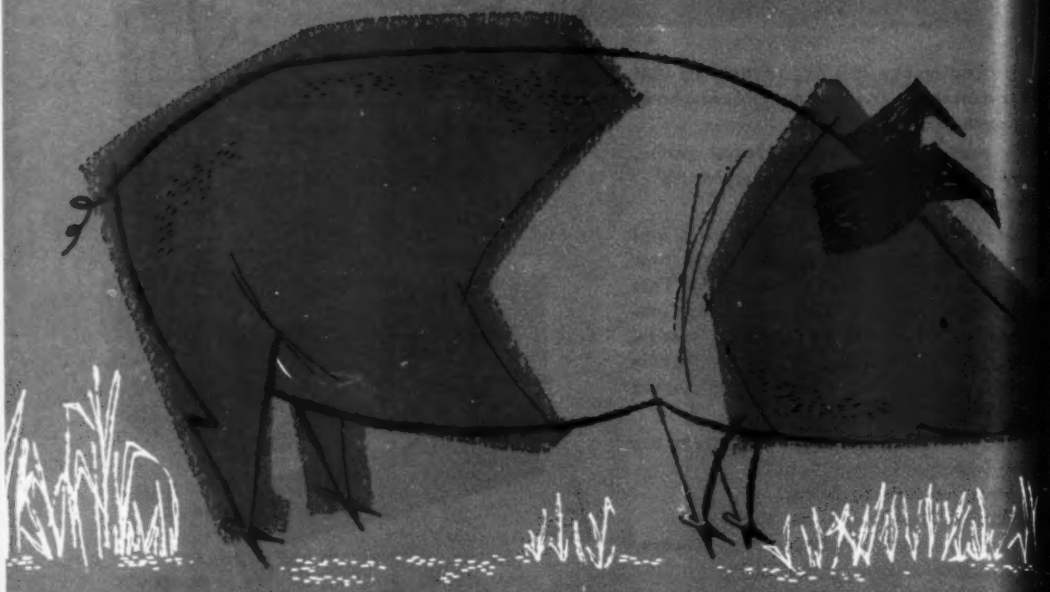

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New Directors for Allied Laboratories, Inc.

(Continued from page XXXIV)

E. A. Cahill, Jr.

to view them. The first was presented at Milwaukee in 1951. Each year since, these telecasts have been improved from the viewer's standpoint as a prime medium for demonstration of technics. A telecast sponsored by the Pitman-Moore Co., division of Allied Laboratories, in cooperation with the Radio Corporation of America, of the proceedings of the Fourth International Poliomyelitis Conference which convened at Geneva, Switzerland last month, broadened the professional services activities of the Company to the international level. Pitman-Moore is a major producer of Salk poliomyelitis vaccine.

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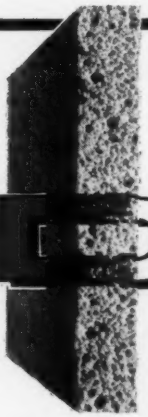

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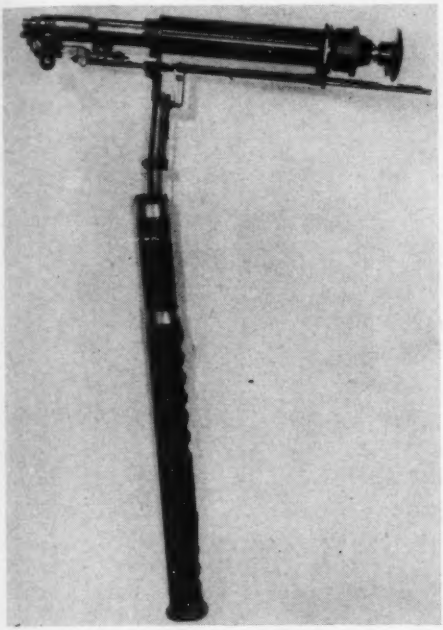
Swift and Co. has adapted, according to news release, a new stunning instrument for cattle in all 38 of its beef-processing plants.



The stunning instrument is understood to be that designed by cooperative efforts of the American Society for the Prevention of Cruelty to Animals and the Remington Arms Co. The stunning instrument is actuated by a .22 caliber blank cartridge. A light tap against an animal's forehead activates a protruding trigger mechanism which in turn fires a charge. A mushroom shaped head, mounted on a captive piston, is sent forward by expanding gases and stuns the animal instantly.

▾ ▾ ▾

Virolitin, designates a new antibiotic having virostatic and virolytic action. The Institute of Veterinary Biochemistry at Lugano, Switzerland has reported the discovery as isolations from two strains of fungus. Research toward chemical synthesis is in process.

Preliminary results in small numbers of cases indicate efficacy of the new antibiotic for the treatment of canine distemper, feline distemper, swine influenza, malignant catarrhal fever of cattle, septic pleuropneumonia, and cowpox.

Smooth and Easy

You'll do better with *the Veterinarian's Clipper*

Oster®

Animals are more docile and easy to handle when clipped with the smoother, quieter Oster. And there is a blade size for every need . . . general, plucking length clipping and surgical shaving.

JOHN OSTER MANUFACTURING CO.
Dept. M7, 5025 N. Lydell Avenue
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LaMOTTE
BLOOD UREA OUTFIT

for the determination of the Urea content of the blood.

An indispensable diagnostic aid in the veterinary laboratory, particularly in small animal practice.

Tests are easily and quickly performed, no special training required.

Result is read directly from special Urea Burette. No calculations required. Accurate to 4 mg. Urea per 100 cc. blood. Complete test takes only 15 to 20 minutes.

Tests also available for Sugar in blood and for Calcium/Phosphorus in blood.

Literature will be sent on request.

LaMOTTE
CHEMICAL PRODUCTS COMPANY
Dept. VM Chestertown, Md.

NEW! for faster weight gain at lowest cost– in steers

more convenient!
lower cost!
effective!

Pfizer

STIMPLANTS*

A NEW STILBESTROL IMPLANT

Pfizer's brand of stilbestrol pellets designed for administration by the Automatic Implant Gun—for *convenient, rapid,* and *low-cost* implanting of steers under *drylot* or *pasture* conditions.

Just *one* instrument, Pfizer's Automatic Implant Gun is all that is needed to implant the recommended 24 to 36 mg. dose of stilbestrol (two to three pellets). No nicking of the skin, no handling of extra instruments. A quick swab of the ear, easy insertion of the surgically sharpened needle under the skin, effortless pressure on the trigger and the animal is ready to be released. Special clips of pellets to allow treatment of three to five animals without reloading.

A time saver in practice . . . indispensable for dispensing!

STIMPLANTS: The recommended dose of 24 mg. (two pellets) for range animals and 36 mg. (three pellets) for feedlot cattle will stimulate:

- maximum daily weight gains with
- less feed consumption per unit gain at
- minimum cost.

STIMPLANTS Introductory Deal available from your Pfizer distributor: Clips of 10 pellets; each pellet contains 12 mg. of stilbestrol.

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Department of Veterinary Medicine
PFIZER LABORATORIES, Brooklyn 6, N. Y.
Division, Chas. Pfizer & Co., Inc.

R_L Rabies Vaccine

Modified Live Virus—Chick Embryo Origin

Made with a true modified rabies virus cultivated in chick embryos, this vaccine is absolutely incapable of producing disease. At the same time, it produces high-degree immunity which has lasted in field tests beyond 2 years!

With the exclusive RECONSTIQUICK FEATURE for convenience! These vaccines reconstitute immediately upon introduction of the diluent, going into a fine homogenous suspension which will pass easily through a 24 gauge needle.

Vacuum Dried . . . for safety!

Phenolized—20% Tissue Suspension

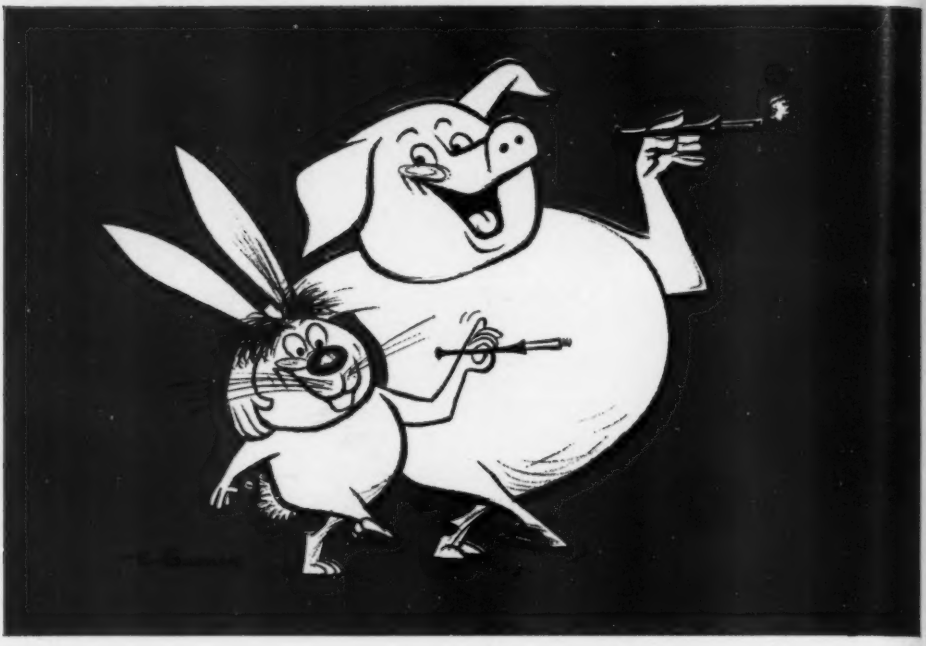
A finely ground homogenous suspension of brain and spinal chord from sheep and goats previously inoculated with Fixed Rabies Virus, National Institute of Health Strain. The virus in this vaccine is chemically inactivated with Phenol. For administration in routine yearly vaccination of pets and/or after exposure to the disease.

All R_L Products offer safety, efficiency and reliability in the prevention and treatment of animal disease!

Research Laboratories, Inc.

Saint Joseph, Missouri

R_L brand products are sold only to graduate veterinarians



NEW SAFE...SOLID IMMUNITY WITH

ROVINE* HOG CHOLERA VACCINE

(Modified live virus-rabbit origin-vacuum dried)

FOR USE WITH SERUM

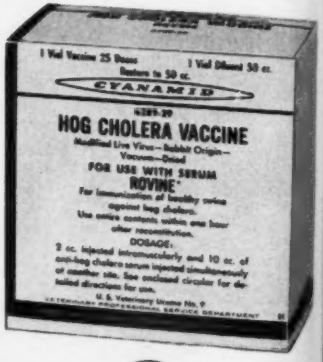
New ROVINE Hog Cholera Vaccine is a modified live virus produced by the adaption of hog cholera virus to rabbits.

This was followed by many serial passages in rabbits, bringing the virus to a degree of modification where it is no longer pathogenic but retains its ability to provide solid dependable immunity against hog cholera.

It is intended for use with anti-hog cholera serum. Administration is 2 cc. of ROVINE and 10 to 15 cc. of serum.

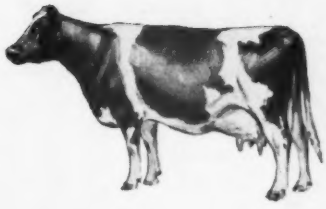
Sold only to veterinarians. For details please write VETERINARY PROFESSIONAL SERVICE DEPARTMENT, AMERICAN CYANAMID COMPANY, NEW YORK 20, N. Y.

*Trademark



CYANAMID

. . . for shortened therapy and more speedy recovery in most febrile conditions



METICILLIN

METIcorten + penICILLIN

aqueous suspension

VETERINARY

reduces treatment time – The METICORTEN subdues inflammation and suppresses symptoms of toxicity, thus assuring more rapid action and shortened convalescence, METICILLIN thus combats stress and simultaneously checks bacterial infection.

single injection convenience – Where two separate injections previously were necessary to treat various conditions complicated by stress, METICILLIN alone may be used effectively. Smaller doses of both drugs may be used than when administered separately because the corticoid-antibiotic combination appears to exert a potentiating effect.

indicated in pulmonary conditions–foot rot–accident cases–pre- and postoperatively in various surgical procedures–as supportive therapy in bacterial infections complicated by stress.

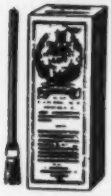
packaging: METICILLIN Aqueous Suspension Veterinary, 10 cc. vial, boxes of 1, 6, 72.

METICORTEN,* brand of prednisone.
METICILLIN,* brand of procaine penicillin for aqueous injection with prednisone.
*T.M. V-MN-J-3107

Schering

SCHERING CORPORATION • BLOOMFIELD, NEW JERSEY

M·A·C



Quick relief for Bone,
Bursal or Tendon Lameness
Single Bottle.....$2.00
3 and 1 free.....5.00
6 and 2 free.....9.00
12 and 4 free.....17.00
24 and 4 free.....28.00
CARTER-LUFF CHEMICAL CO.
Hudson, N. Y.

"Confinement fretting," a problem of those who hospitalize pet animals, was discussed by Dr. Jack O. Knowles at the California state meeting at Santa Barbara in June. He presented cases histories on 45 such animals treated with paxital® with the conclusion that anxiety of dogs due to separation from their owners, and confinement in strange quarters, can be relieved or allayed by the use of the new tranquilizer.

®Warner-Chilcott Laboratories, Morris Plains, N.J.

Appointed by Merck

Dr. David F. Green has been appointed an executive director of Merck Sharp & Dohme

Dr. David F. Green

Research Laboratories. He will head the Department of Animal Health, which is reponsible for veterinary research.

▼ ▼ ▼

There appears to be no justification for supplementing adequate swine rations with stilbestrol, according to Georgia researchers.

the Relaxant of
Smooth Muscle Spasm

Octin

Combats feline dysuria, bladder spasms and colic, nervous frequency of urination, colicy diarrhea, colitis, enteritis, spastic constipation, pylorospasm and carsickness.

Dose: Dogs — ½ to 1 cc. OCTIN intramuscularly, or ½ to 1 oral tablet 3 or 4 times daily. Cats — ½ this dose.

Available in: Ampules, 1 cc., (100 mg.), 6's and 100's.
Sterile Vials, 10 cc., 100 mg. per cc.
Oral Tablets, (sugar-coated) 2 grains, 100's and 500's.

Octin®, product of E. Bilhuber, Inc.

BILHUBER-KNOLL CORP. distributor
ORANGE
NEW JERSEY

IN NERVOUS, HYPEREXCITABLE DOGS

Equanil®

MEPROBAMATE
Licensed under U. S. Patent No. 2,724,720

ALLAYS BOTH MENTAL AND MUSCULAR DISTRESS

By its unique "dual blocking action" on abnormal stimuli, EQUANIL relieves not only small animal anxiety and tension, but also the nervousness, excitability, unruliness and viciousness that so often accompany them.

And in the frequently-encountered problems of treating small animals:

1) Nervousness in the dog creates an element of excitability that may overshadow and obscure accuracy of diagnosis, and
2) This excitability, may strain the relationship between veterinarian and client.

EQUANIL SOLVES BOTH PROBLEMS—simultaneously!

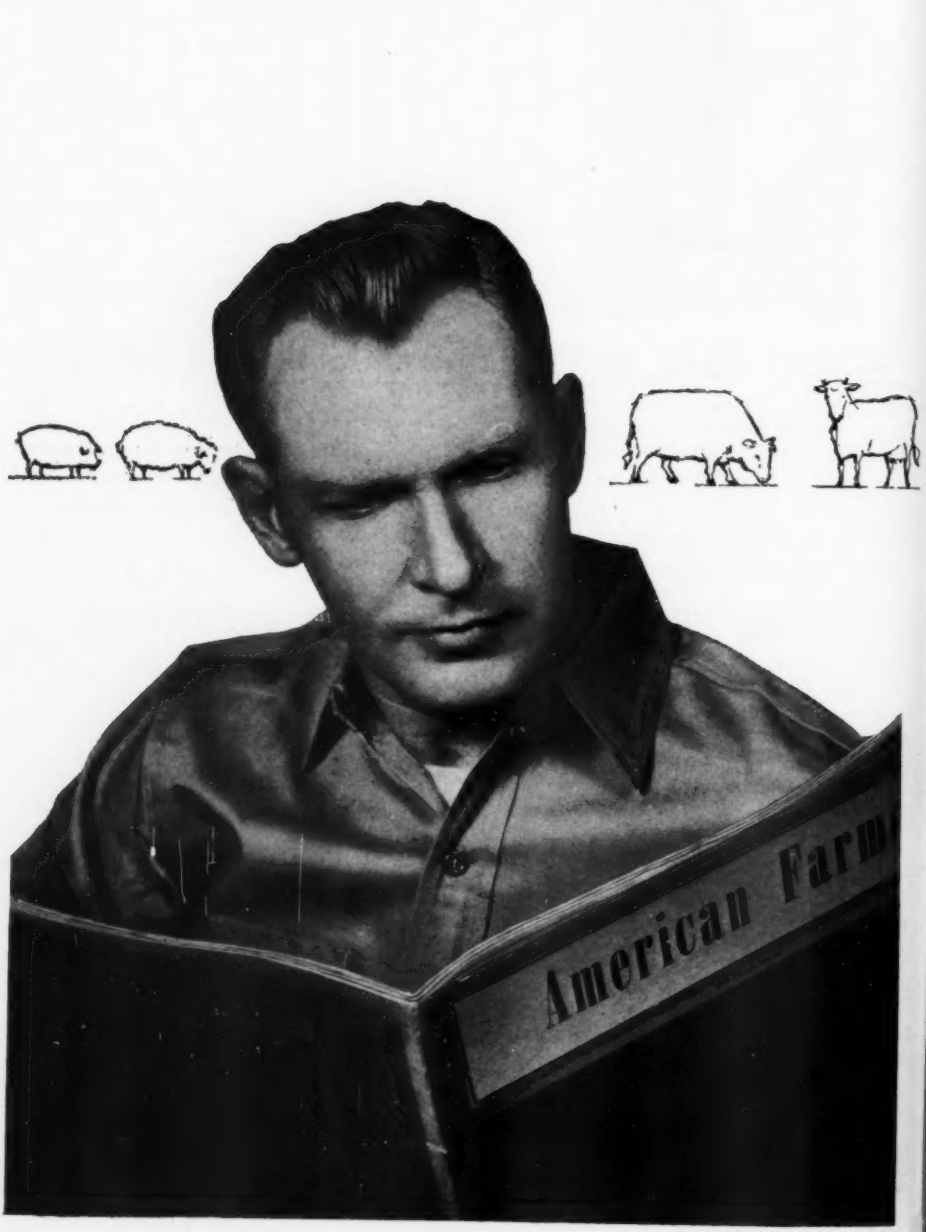
AVAILABLE:
200 and 400 mg. Tablets,
bottles of 50.

Wyeth®
Philadelphia 1, Pa.

SUPPLIED ONLY TO THE PROFESSIONS

TELLING AMERICA ABOUT THE VETERINARY PROFESSION

The Veterinarian



in Farm Magazines

This nation's farm magazines, too, are part of the broad-gauge public relations program for the veterinary profession now being conducted by Associated Veterinary Laboratories.

Every month in the year timely news material is released to—and printed by—major farm publications, coast to coast. These educational articles do two jobs. 1) They alert farmers to livestock disease hazards. 2) They stress the importance of calling a veterinarian when these or other animal health problems occur. In addition, similar public education is being carried on through newspapers, radio, television, and motion pictures by Associated Veterinary Laboratories' public relations outlet, American Foundation for Animal Health.

This entire effort is made possible by the ethical companies listed below. Thank you for remembering them when placing your orders.

The Veterinarian and Mastitis Control

Prompt Veterinary Help Can Prevent Pig Loss

Pregnancy Disease A Real Threat

Look-Alike Diseases Need Expert Diagnosis

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Sponsors of American Foundation for Animal Health

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Norden Laboratories
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Sioux City Serum Co.
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DOCTOR IS

BEST By TEST

it's dependable, inexpensive, and in many ways superior for your personal use and recommendation. Write for a FULL size box — FREE.

Sterling Research Corp.

Dairy Div. VM Sidway Bldg. Buffalo, 3, N. Y.

For the Veterinarian

DETROIT VETERINARY SUPPLY CO.

DETROIT 32, MICHIGAN

Modern Hospital Appearance

at Modest Cost . . .

FIBREPLEX KENNELS

Fibreplex Kennels are superior one-piece molded fibreglass kennels, designed and engineered to the most exacting standards for modern use. Manufactured from selected resins and fibreglass for maximum strength, durability and utility, yet priced amazingly low.

Coloring is an integral part of Fibreplex manufacture, making them wear-resistant, stain-repeling, chemical-resistant and chip-proof. May be obtained in a variety of pleasing pastel shades.

Write Today for free literature.

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Bilhuber-Knoll Corp. Now Knoll Pharmaceutical Company

Dr. E. A. Bilhuber, president of Bilhuber-Knoll Corp., has announced that negotiations have been completed with Knoll A. G. of Germany which will enable Bilhuber-Knoll to bring to the United States and Canada the many new medicinal products which Knoll now markets, and those resulting from future research. In conjunction with these negotiations the corporation name, Bilhuber-Knoll Corp., has been changed to Knoll Pharmaceutical Company.

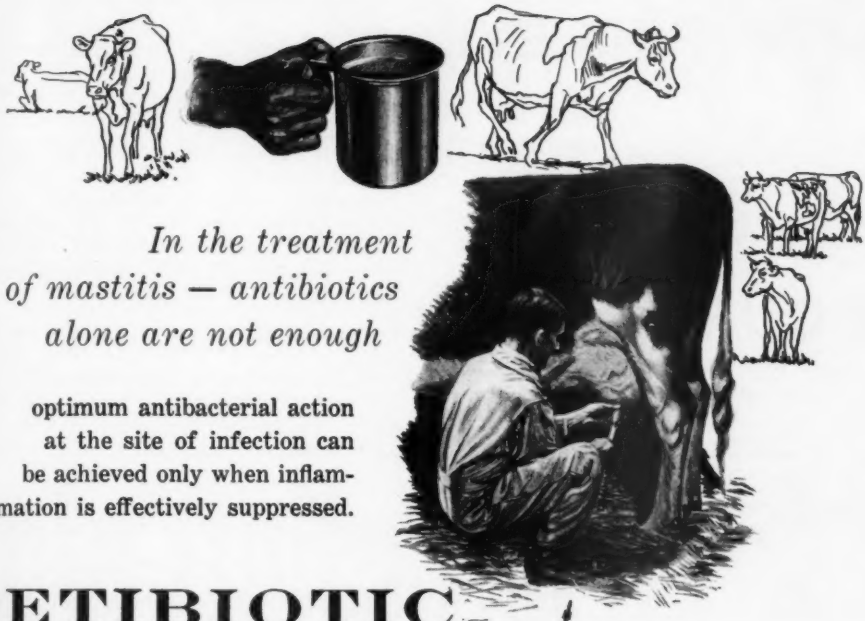
Research of the Knoll industry has been directed particularly toward the fields of cardiac, circulatory, and respiratory disorders. Investigations are also in progress for the further development of antibiotics and for medicinal preparations. Bilhuber-Knoll has been directing its research and investigations in these areas for the past 30 years, and this joining of efforts will strengthen the Company in its program of bringing forth new and improved products.

There will be no changes in the corporate management or personnel. It is anticipated that the present facilities in Orange, New Jersey will serve as a nucleus for further expansion in the near future.

▼ ▼ ▼

Feedstuffs or Vehicles for Medicaments

Are animal feed manufacturers overstepping the bounds when they recommend their feeds, with additives, for specific diseases? The concensus is that they are doing this very thing. Probably the greatest impetus to this form of pseudo animal disease handling was established when the value of the addition of sulfaquinoxaline to poultry feeds produced almost dramatic effects. However, the diagnosis of poultry aliments is not a simple clear-cut procedure for poultrymen, and an error may permit disease to obtain a firm footing with resultant heavy losses. The veterinarian is certainly an indispensable factor in disease diagnosis. On the other hand, recognized agents such as trace and other minerals, are nutrients in the true sense of the word. Even some of the antibiotics added to increase profitable weight gains, so long as they are not indiscriminately recommended for the handling of pathological conditions, may be considered nutrients. The general thought expressed in this item is also the opinion of several editors of the agricultural press.



In the treatment of mastitis — antibiotics alone are not enough

optimum antibacterial action at the site of infection can be achieved only when inflammation is effectively suppressed.

METIBIOTIC

mastitis infusion

VETERINARY

combines the potent anti-inflammatory properties of METICORTEN Acetate and the broad-spectrum antibacterial activity of penicillin-dihydrostreptomycin for maximum therapeutic effect throughout the infected area. The danger of fibrosis and permanent injury to secretory tissue is markedly reduced by the specific anti-inflammatory action of METIBIOTIC in the udder.

Packaging: 7.5 cc. tube, boxes of 12, 72 and 144.

- *rapidly reduces inflammation*
- *quickly eradicates infection*
- *minimizes tissue damage*
- *restores normal milk production*

Schering

METICORTEN,® brand of prednisone.
METIBIOTIC,® brand of procaine penicillin-dihydrostreptomycin in oil with prednisone acetate.
V-MB-J-397

STOP PINK EYE

WITH

OCUROL-VET

THE ONE-SQUIRT METHOD

Proven On More Than A Million Head

Supplied in 60cc bottles with handy spray attachment. For treatment of Pinkeye and other Bacterial or Fungicidal infections of the eye.

ORDER

From Your Independent Veterinary Distributor

Manufactured by The Ocurol-Vet Co.
Sabinal, Texas

THERAPOGEN

the proven effective germicidal agent

You'll find THERAPOGEN virtually free of side effects and toxicity. Its completely effective yet mild cleansing action has been found excellent for obstetrical work by veterinarians for many of the finest horse breeding farms in Kentucky. Inexpensive THERAPOGEN may be ideal for your needs, also.

Write, wire or call today for samples, literature and the name of your nearest distributor.

THEO. MEYER Est.
213 SO. 10TH ST., PHILA. 7, PA.

Infectious Bovine Rhinotracheitis (IBR) Vaccine Now Available

Pitman-Moore Company of Indianapolis has announced a new vaccine as a prophylactic agent to control infectious bovine rhinotracheitis (IBR) in cattle.

The vaccine, designated rhivax, was developed by the Company's research laboratories in Zionsville. Procedures developed and employed in the production of the Salk poliomyelitis vaccine were combined with more recent advances in tissue culture technics in the production of this product.

The disease was recognized as a separate entity in Colorado feedlots in 1950. It has also been described by California scientists and has since spread to most of the western states. The disease has also been reported in the Midwest causing serious losses.

▾ ▾ ▾

New Postexposure Human Rabies Vaccine

A new type of rabies vaccine for human use has been developed by Eli Lilly & Co., according to release by the Indianapolis, Ind. concern.

Produced from embryonated duck eggs, the new product is therefore devoid of factors responsible for paralytic symptoms produced on rare occasions by the nerve tissue vaccine employed for years for postexposure treatment in man. Preliminary potency test are reported encouraging.

▾ ▾ ▾

On the basis of gross receipts, the poultry industry now ranks as the third most important agricultural practice, Dr. George Briggs, National Institute of Health, Washington, D. C., stated that Americans are eating twice as much chicken as they were in 1936. Consumption of broilers now averages seven birds per person, per year, or approximately 30 birds per year for every family in the United States.

▾ ▾ ▾

Charles S. Travers, executive secretary of the California Veterinary Medical Association, was honored at the Exhibitors Luncheon during sessions of the state meeting at Santa Barbara in June by presentation to him of a testimonial statement and a handsome wrist watch.

FOR

VERSATILITY

A MODERN DRUG IN A MODERN CONTAINER

FOR THE DAY-TO-DAY PRACTICE: **PROBLEMS OF**

- STRESS: involving bovine ketosis; anesthesia hazards; surgery; milk fever
- INFLAMMATION: arthritis; bursitis; myositis; as well as skin, ear and eye conditions; and allergies
- SHOCK: severe injury; emergency surgery; anaphylaxis; poor surgical risks

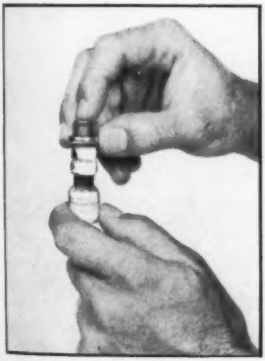
THE PRODUCT OF CHOICE

Solu-Delta-Cortef*

INTRAVENOUSLY OR INTRAMUSCULARLY

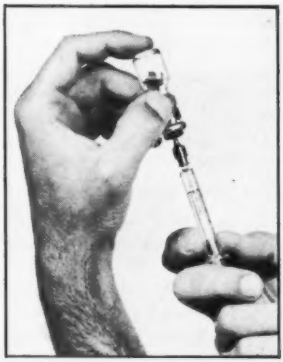
EMERGENCY CONVENIENCE

Mix-O-Vial* provides 100 mg. of Solu-Delta-Cortef in the same vial with 1.8 cc. of Sterile Water for Injection—a package and product designed for speed so you can act fast with fast-acting therapy.



remove protective cap

press plunger to mix powder and water



withdraw fresh, active solution

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Upjohn

Veterinary Medical Department / The Upjohn Company, Kalamazoo, Michigan

SAMCO

CREMATORY DESTRUCTOR

all types gas fired—AGA approved controls

●

ENGINEERED DEVELOPMENT SPECIAL for the VETERINARY PRACTITIONER

Rapid disposal wet and dry combustibles cage papers, clinical waste.

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CREMATION OF ANIMAL CARCASSES, amputations, feces, hair, entrails, offal, garbage, maintaining clean and orderly surroundings.

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GREAT HEAT and FIREPOWER — 125,000 BTU. HYDRAULIC REFRACTORY CONCRETE 1½" insulation.

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CAPACITY 8-BUSHEL — FEED DOOR 21" W x 19" H.

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100% SAFETY AUTOMATIC MR2 THERMOPILOT VALVE pilot light burner — main burner pressure type. Automatic timer shut-off control. Barometric Damper.

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MANY ANIMAL HOSPITALS USING THIS EQUIPMENT Fully equipped. shipped assembled. simple to install. Bolted construction. Portable. Compact. Wgt. over 800#.

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LARGER CAPACITIES ARE AVAILABLE IF REQUIRED

●

Investigate unique purchase plan for great saving to D.V.M. or kennel owner.

Syrall Manufacturing Company

511 North State Street, Syracuse 3, N. Y.

MEETING CALENDAR

Arkansas Veterinary Practitioners Association. Annual Meeting. Majestic Hotel, Hot Springs, Ark., Oct. 2-4, 1957. Dr. Jack R. Jones, Jonesboro, Ark., secretary.

New England Veterinary Medical Association. Twenty-third Annual Meeting. Equinox House, Manchester, Vermont, Oct. 6-9, 1957. Dr. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Purdue University. Forty-fifth Annual Short Course for Veterinarians. Agricultural Experiment Station, Lafayette, Ind., Oct. 9-11, 1957. Dr. L. M. Hutchins, Purdue University, Lafayette, Ind., chief veterinarian.

Florida State Veterinary Medical Association. Annual Meeting. Fort Harrison Hotel, Clearwater, Fla., Oct. 13-15, 1957. Dr. Robert P. Knowles, 2101 N. W. 25th Ave., Miami 42, Fla., secretary.

University of Missouri. Thirty-third Annual Short Course for graduate veterinarians. Columbia, Mo., Oct. 14-15, 1957. Dr. Cecil Elder, chairman.

Illinois Conference and Extension Short Course for Veterinarians. University of Illinois, College of Veterinary Medicine, Oct. 17-18, 1957. Dr. L. E. Boley, University of Illinois, chairman.

Eastern Iowa Veterinary Association. Forty-fourth Annual Meeting. Hotel Sheraton-Montrose, Cedar Rapids, Iowa, Oct. 17-18, 1957. Dr. F. E. Brutsman, Graer, Iowa, secretary.

Southern Veterinary Medical Association. Annual Meeting. Roanoke Hotel, Roanoke, Va., Oct. 27-30, 1957. Dr. A. A. Husman, P. O. Box 91, Raleigh, N. C., secretary.

Omega Tau Sigma Annual International Convention. Alpha Chapter, School of Veterinary Medicine, University of Pennsylvania, Nov. 7-9, 1957. B. Joseph Tribolla, Oak Avenue, R.F.D. #2, Hilltop, New Jersey.

Midwest Small Animal Meeting and Regional A.A.H.A. Meeting. Hotel Burlington, Burlington, Ia., Nov. 13-14, 1957. Dr. J. Porter Coble, 2828 S. MacArthur Blvd., Springfield, Ill., secretary.

New York State Veterinary College. Fiftieth Annual Conference for Veterinarians. Cornell University, Jan. 8-10, 1958. Dr. W. A. Hagan, Cornell University, Ithaca, N. Y., dean.

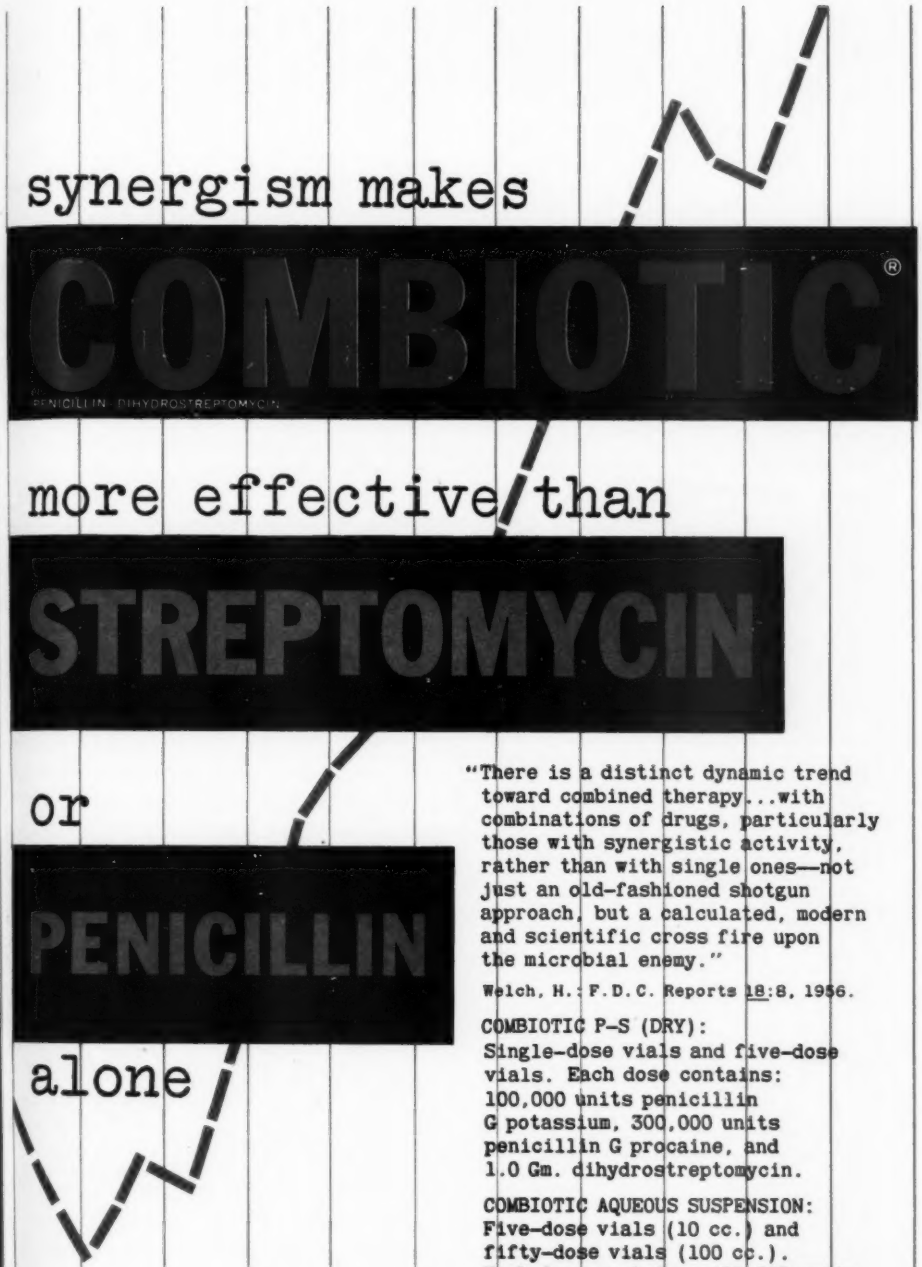
Oklahoma Veterinary Medical Association. Forty-third Annual Meeting. Hotel Lawtonian, Lawton, Okla., Jan. 9-10, 1958. Mrs. Larma Bennett, 2805 S. 51st St., Oklahoma City, Okla., executive secretary.

Kansas Veterinary Medical Association. Fifty-fourth Annual Convention. Hotel Broadview, Wichita, Kans., Jan. 12-14, 1958. Dr. K. Maynard Curts, 5236 Delmar Ave., Kansas City 3, Kans., secretary.

Iowa Veterinary Medical Association. Annual Meeting. Hotel Fort Des Moines, Des Moines, Ia., Jan. 14-16, 1958. Dr. F. B. Young, Waukee, Ia., secretary.

Indiana Veterinary Medical Association. Annual meeting. Hotel Severin, Indianapolis, Ind., Jan. 15-17, 1958. Dr. L. M. Borst, 3315 Shelby, Indianapolis, Ind., secretary.

Michigan State University. Thirty-fifth Annual Post Graduate Conference for Veterinarians. College of Veterinary Medicine, Michigan State University, East Lansing, Mich., Jan. 22-23, 1958. Dr. W. W. Armistead, dean.



"There is a distinct dynamic trend toward combined therapy...with combinations of drugs, particularly those with synergistic activity, rather than with single ones—not just an old-fashioned shotgun approach, but a calculated, modern and scientific cross fire upon the microbial enemy."

Welch, H.: F.D.C. Reports 18:8, 1956.

COMBIOTIC P-S (DRY):
Single-dose vials and five-dose vials. Each dose contains: 100,000 units penicillin G potassium, 300,000 units penicillin G procaine, and 1.0 Gm. dihydrostreptomycin.

COMBIOTIC AQUEOUS SUSPENSION:
Five-dose vials (10 cc.) and fifty-dose vials (100 cc.). Each dose contains: 400,000 units penicillin G procaine, and 0.5 Gm. dihydrostreptomycin.

Sold to veterinarians only

Pfizer Department of Veterinary Medicine

PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N.Y.

—DEATHS OF VETERINARIANS—

Alphus L. Abell, Monroe City, Mo., KCV '10, April 23, 1957.

Ben Anderson, Ruthton, Minn., ISC '25, April 2, 1957.

G. H. Anderson, Holdrege, Nebr., KCV '11, May 25, 1957.

Loy L. Anderson, Argos, Ind., MCK '09, May 20, 1957.

Bruce Baker, Meeker, Colo., COL '19, died recently.

Robert F. Batchelor, Washington, D. C., OSU '47, Feb. 26, 1957.

W. L. Bolin, Montgomery, Ala., ST JOS '21, died recently.

Harry L. Brown, Onarga, Ill., CVC '11, May 30, 1957.

Alfred D. Bullock, Sioux City, Iowa, OSU '04, April 19, 1957.

Wilfred E. Catt, Arlington, Ind., IND '16, May 5, 1957.

Lester C. Clark, Rushville, Ill., MCK '19, May 14, 1957.

Walter R. Cox, Flint, Mich., ONT '08, May 1, 1957.

R. E. Curtis, Ransom, Ill., MCK '08, May 27, 1957.

H. Ernest Defendorf, Grand Blanc, Mich., May 23, 1957.

John T. E. Dinwoodie, Billings, Mont., UP '13, June 3, 1957.

Wynter C. Graber, Nashville, Tenn., OSU '09, June 22, 1957.

Rudolph E. Hanson, Forest City, Iowa, MCK '10, died recently

Charles S. Hayward, Mattoon, Ill., ONT '02, June 21, 1957.

Carl H. Hofstrand, Leeds, N. Dak., UP '13, June 10, 1957.

Earl F. Johnson, Prospect, Ohio, OSU '34, May 29, 1957.

Clement Kelnhofer, Medford, Wisc., WES '05, Jan. 22, 1957.

James M. Lawson, Montgomery, Ala., KCV '10, Feb. 3, 1957.

Louis M. Lounsbery, Newburgh, N. Y., COR '18, May 10, 1957.

T. E. Ludgate, Fort Dodge, Iowa, CVC '12, Aug. 15, 1957.

William O. McHugh, Zanesville, Ohio, ONT '97, May 26, 1957.

Charles W. Neal, Siloam Springs, Ark., TEX '31, April 10, 1957.

William A. Nichel, Laurelton, N. Y., AVC '92, died recently.

James J. Moloney, Forest Hills, N. Y., AVC '98, April 12, 1957.

Orin Henry Osborn, Seaside, Ore., MCK '12, Aug. 12, 1957.

V. C. Pauhlman, Prosser, Wash., WSC '15, May 20, 1957.

Clarence M. Pentifuff, Jr., Minneapolis, Minn., KSC '43, April 5, 1957.

Harry L. Reiter, Bowling Green, Ohio, OSU '16, Oct. 28, 1956.

Harry B. Roshon, Reading, Pa., UP '15, died recently.

Asa J. Royal, Midnight, Miss., USC '15, May 6, 1957.

Charles F. Runnels, St. Clairsville, Ohio, OSU '30, May 17, 1957.

Arthur N. Ruby, Wamego, Kans., STJ '15, April 29, 1957.

George F. Scheetz, Prescott, Ariz., OVC '28, April 5, 1957.

Edwin D. Schrock, Haugen, Wisc., UP '09, May 13, 1957.

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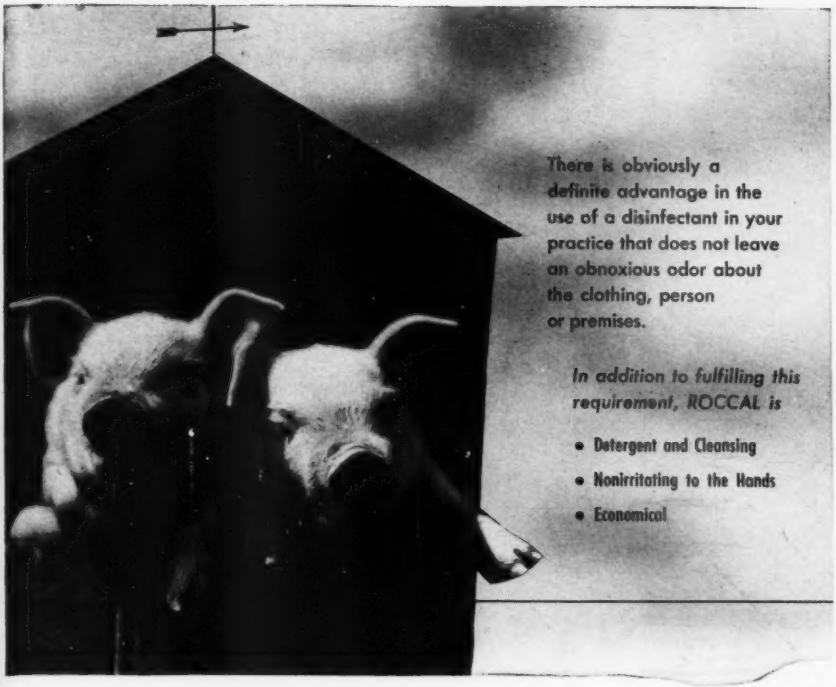

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